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## PHARMACEUTICAL EDUCATION

**Volume V**

**July, 1941**

**Number 3**

### CONTENTS

Vitamin K— <i>Dr. Henrik Dam</i> .....	273-288
The Fundamental Sciences—Their Role in Medical Progress— <i>Anton J. Carlson</i> .....	289-299
The Facilities for the Establishment of a Center of Pharmaceutical Historical Work and Information at Madison, Wisconsin— <i>George Urdang</i> .....	300-313
Right Pharmaceutical Thinking— <i>Charles H. Rogers</i> .....	313-320
There is Need for Broader and More Effective Cooperation Among the Health-Service Professions— <i>Andrew G. DuMez</i> .....	320-329
The Genoa Druggist Code of 1407— <i>Robert L. Reynolds</i> .....	330-332
The Significance of the Centennial Celebration of the School of Pharmacy of the University of Maryland— <i>Andrew G. DuMez</i> .....	333-337
The Early Days of American Pharmacy— <i>George Urdang</i> .....	337-340
Prescription Files and the Teaching of Dispensing Pharmacy— <i>Elmer M. Plein</i> .....	340-342
Editorials .....	343-353
The Editor's Page.....	354-362
Gleanings from the Editor's Mail.....	363-366
Pharmaceutical Education on the March.....	367-382
Notes and News.....	383-396
Miscellaneous Items of Interest.....	397-415, 422-424
New Books.....	415-421

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## Marriages

Guilford C. Gross, instructor and Miss Hope Allison Blewitt, secretary, Division of Pharmacy, South Dakota State College were married on March 31, 1941 at Brookings.

Donald R. Mathieson, graduate assistant in the College of Pharmacy, University of Nebraska and Miss Ellensena James of Dannebrog, Nebraska, were married June 5, and are living in Lincoln.

Dr. Kenneth D. Hamlin, post-doctorate fellow at the University of Illinois, and Miss Janet Hoy of Baltimore were married on June 18, 1941 at Baltimore.

Mr. Robert Edward Thompson, assistant in pharmacology and brother to Dr. Marvin R. Thompson, and Miss Elizabeth Seibert Roberts, daughter of Mr. and Mrs. Clarence A. Roberts, were married on May 31, 1941 at the Church of the Ascension and Prince of Peace in Baltimore.

Mr. William Cook, journalist with the Times Picayune of New Orleans and Miss Helen L. Creech, instructor in chemistry at Loyola University, were married on June 5, 1941.

## Vitamin K\*

DR. HENRIK DAM

Biochemical Institute, University of Copenhagen, Denmark

Vitamin K is the name given to certain chemically related substances which protect man and the higher animals against a well characterized hemorrhagic disease. The most important members of this group are vitamin K<sub>1</sub> from green leaves and vitamin K<sub>2</sub> which is formed by bacteria. Both substances are lipoids. Their chemical constitution is known and they can be synthesized.

The hemorrhagic disease which is due to lack of vitamin K was first seen in chicks, but later it was also shown that mammals, including humans, may suffer from the disease. It may now be said that the importance of vitamin K to certain fields of human medicine is as great as is its interest to theoretical biochemistry.

Lack of vitamin K manifests itself by a pronounced tendency to bleed. In chicks the hemorrhages may in most cases be seen through the skin, and the bleedings are usually found on those parts of the body which are most exposed to mechanical trauma. The occurrence of hematin in the feces because of bleeding from the intestinal tract is also a frequent symptom. The disease is associated with a reduction of the clotting power of the blood. The hemorrhages develop as a result of minute lesions in the vessels due to mechanical trauma. These are not stopped by a clot, as is the case in normal animals, but cause a continuous oozing of blood from the wounded part.

According to the classical theory the process of blood coagulation may be separated into two stages.

---

\*Dr. Henrik Dam, the discoverer of Vitamin K is covering the United States on a lecture tour under the auspices of the American-Scandinavian Foundation of New York City. On April 9 and 10 Dr. Dam and his gracious wife and co-worker, Mrs. Henrik Dam, were the guests of the College of Pharmacy of the University of Nebraska, the Nebraska Chapter of Sigma Xi, and the Lancaster County Medical Society. At the request of the editor, Dr. Dam prepared the manuscript of his address for publication in this Journal in order that our readers might enjoy the rare treat of having the story of Vitamin K direct from the pen of its distinguished discoverer. To Dr. and Mrs. Dam we are most grateful.—Ed.

(1) The activation of a proenzyme *prothrombin*, occurring in the blood plasma, into an enzyme *thrombin* by the action of *thrombokinase* (also called *thromboplastin*) a constituent of the juice from wounded cells or disintegrated thrombocytes.

(2) The conversion of *fibrinogen* into *fibrin* by the action of *thrombin*. The first stage requires the presence of calcium ions.

This theory forms a suitable basis for the understanding of the derangement of the coagulation mechanism caused by the absence of vitamin K. It is easy to show that prothrombin and no other component is lacking when vitamin K is withdrawn from the diet. (Dam, Schoenheyder and Tage-Hansen 1936, A. J. Quick 1937). The use of chicks in the study of the lack of vitamin K has not only the advantage that these animals get the disease very easily, but it also facilitates the examination of the blood coagulation, because the thrombocytes of chicks and other birds do not play any important role in furnishing the blood with thrombokinase, as the thrombocytes of man and mammals do. It is therefore easy to collect a sample of blood from an artery and centrifuge and treat it in different ways without risk of spontaneous clotting. It is necessary not only to give the chicks a K-free diet, but also to keep them under clean conditions so that they cannot soil their food and water with feces. Almquist and Stokstad were the first to show that vitamin K can be formed by putrefaction. Even when no vitamin K is present in the diet, the feces of chicks will contain vitamin K. Nevertheless, the reason these animals so easily suffer from the disease may be due to the fact that the large intestine of the chick is short as compared with mammals, so that the vitamin K formed by bacteria is not absorbed to any great extent. An exact examination of the clotting power reveals the fact that the disease begins to develop a few days after vitamin K has been taken away from the diet, but the full development—reduction of the prothrombin to about 1 per cent of the normal value—requires a longer time, varying from 14 to 28 days. The prothrombin content seldom falls to zero and therefore the coagulability is not entirely lost. It is therefore often seen that hemorrhages in K-avitaminous chicks stop and are reabsorbed without alteration of the diet and without increase of the prothrombin content.

Estimation of vitamin K in a given product can best be

carried out by determining the prothrombin content of the blood before and after the ingestion of the substance to be tested and comparing the results with those obtainable by means of a standard vitamin K preparation. Time will not permit me to give a detailed account of the different methods available for determining the prothrombin content. It must suffice to mention briefly three different principles which may be applied:

(1) According to the method of H. P. Smith and his associates, the prothrombin of the plasma is first completely converted into thrombin, and the activity of the thrombin is then measured by its action upon a fibrinogen solution.

(2) According to Quick's method the coagulation is brought about by adding a large excess of thrombokinase (thromboplastin) to the plasma. In this case the prothrombin content will be the only factor which determines the coagulation time ("prothrombin time") assuming that anticoagulating substances are constant.

(3) According to the method generally used in our laboratory, advantage is taken of the fact that a plasma containing only half as much prothrombin as normal plasma will require about double the concentration of thrombokinase in order to coagulate in the same time as a normal plasma. A plasma containing about one tenth as much prothrombin as normal plasma will require about 10 times as high a concentration of thrombokinase in order to clot just as rapidly as normal plasma, et cetera. This principle also supposes that anticoagulating substances do not vary. We therefore take the plasma, dilute it with equal parts of Ringer's solution, and add to 4 drops of the diluted plasma 1 drop of a tissue extract preparation. By turning the mixture in a constant water bath, the coagulation time is noted and the same experiment is carried out with a series of known dilutions of the tissue extract. In this way the concentration which coagulates the plasma in 3 minutes is found. The same experiment is carried out with normal plasma. If  $K_n$  is the concentration of the tissue extract which coagulates normal plasma in 3 minutes and  $K$  the corresponding concentration which coagulates the plasma to be examined, in the same length of time, then  $K_n/K \times 100$  is approximately identical with the prothrombin content in per cent of the normal value.

If the same method is to be used for human or mammalian

blood plasma, there is then the difficulty that the blood platelets will cause the blood to clot before the determination can be made. It is, however, possible to use the method also for human and mammalian blood when a small and exactly measured quantity of heparin solution is placed in the centrifuge tube in which the blood is collected (the blood—for instance 4 cc.—is taken from the arm vein through a cannula without syringe). This small amount of heparin will remove the tendency of spontaneous clotting and now the determination can be carried out in the same way as for chicken blood. (The very low prothrombin values, 1 per cent or less, are probably found too low by this method.)

The unit in which the vitamin K activity is expressed differs with different investigators. In our laboratory we defined the unit as that quantity which in three days must be given per Gm. body weight of the chick in order to bring the prothrombin value from a very low level up to the normal value. This unit was found to be represented by 2 mg. of a dried spinach-powder which we had in the form of tablets. Now where a series of chemically pure substances with high vitamin K activity are available, it is a natural thing to use one of them as a standard but we must choose the amount which represents the unit so that continuation with our previous unit is maintained.

We have tested a series of natural products for vitamin K. In the vegetable kingdom the vitamin is principally found in all kinds of green leaves. This source contains several hundred units per Gm. of weight. Most fruits are a poor source, an exception is tomatoes. Cereals, beans and peas are also poor sources. Carrots, potatoes and sugar beets contain practically nothing. The same holds true for leaves which have grown in the dark and therefore have not formed chlorophyll. Vitamin K is formed in the particles in the plant cell which contain the chlorophyll, the chloroplasts. Such plants as are able to form chlorophyll in the dark, such as spruce and pine, can also form vitamin K without light. When the leaves wither in the fall, vitamin K does not disappear as rapidly as does the chlorophyll. The yellow or brown chestnut leaf contains practically as much vitamin K as the fresh green leaf. Lower plants such as mushrooms which do not contain chlorophyll, are poor sources of vitamin K or contain none at all. Yeast does not

contain it but certain bacteria are rich sources. Vitamin K does not stimulate growth or respiration of yeast cells but Woolley and McCarter have found that vitamin K like substances act as growth factors for the Johne's bacillus.

In the animal organism vitamin K does not occur so abundantly as in the plant. In the hen only small quantities are deposited in the different organs, even if the food is rich in vitamin K. Little is deposited in the liver, nor does it pass into the eggs in any considerable amount. The mammalian organ which has hitherto been found to contain most vitamin K is hog liver—about 50 units per Gm. dry weight. Cow's milk and human milk are poor sources, less than 3 units per Gm. dry matter. The feces are rich in vitamin K.

*The Chemistry of Vitamin K.*—Pure vitamin K or concentrates thereof are prepared from green leaves or putrefied proteins. The first of these materials yields vitamin K<sub>1</sub> whereas the other yields vitamin K<sub>2</sub>. The terms K<sub>1</sub> and K<sub>2</sub> were introduced by Doisy and coworkers who were the first to show that vitamin K from bacteria was different from vitamin K from green leaves.

Natural vitamin K is easily oxidized in an alkaline reaction. It is therefore most convenient to use physical methods for its concentration from the crude lipoid extract of the raw material. Selective adsorption, separation of less active material by freezing and molecular distillation, are the principal steps in the purification method.

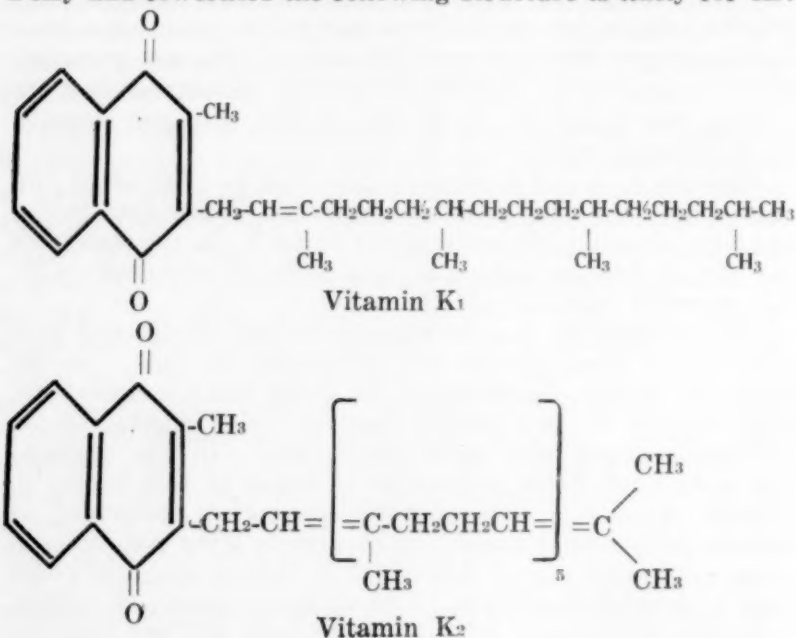
Vitamin K<sub>1</sub> is not so strongly adsorbed as chlorophyll and xanthophyll, but stronger than carotene. Adsorption media which are strongly alkaline may not be used. In the molecular still the vitamin passes up at a pressure of one-thousandth mm. mercury and 120°-140° C.

The preparation of pure vitamin K from alfalfa was first reported by Dam, Karrer and coworkers in 1939. In the same year it was also prepared by Doisy and his coworkers. Pure vitamin K<sub>1</sub> is a pale yellow oil which crystallizes at low temperatures and melts below zero. In the purification method of Doisy, advantage is taken of this property. Vitamin K<sub>1</sub> has a characteristic absorption spectrum, (4 maxima between 243 and 270 millimicrons, lying close to each other, and one at 328 millimicrons.) It yields a transient violet color with sodium ethylate. The vitamin consists of carbon, hydrogen, and oxygen (82.2 per cent C and 10.7 per cent H).



The biological activity is approximately 12 million units per Gm. The pure vitamin and concentrates thereof, are easily destroyed by light and by bromine. The molecular weight is 450, corresponding to  $C_{31}H_{46}O_2$ . Doisy and coworkers first showed that the substance has a quinoid structure, and that it is derived from 1,4-naphtoquinone. Oxidation of vitamin  $K_1$  with chromic acid yields among other substances phthalic acid and 2-methyl-1,4-naphtoquinoneacetic acid. These and other findings (the formation of trimethyl-1,4-pentadecanone by ozonization) suggested that the vitamin might eventually be 2-methyl-3-phytyl-1,4-naphtoquinone. That this is the case was shown by synthesis both by Doisy and by Fieser. The synthesis was carried out either by condensation of the monosodium salt of 2-methyl-1,4-napthohydroquinone with phytyl bromide or by heating the hydroquinone with phytyl in the presence of water-free oxalic acid.

Vitamin  $K_2$  which was prepared from putrefied fishmeal by Doisy and his coworkers, is a crystalline substance melting at  $54^\circ C$ . The formula, which is  $C_{41}H_{56}O_2$ , differs from that of  $K_1$  by a longer and more unsaturated side chain. According to Doisy and coworkers the following structure is likely for  $K_2$ :





The biological activity of  $K_2$  is less than that of  $K_1$ ; 8 million units per Gm. as compared with 12 million for  $K_1$ .

Other substances having a structure resembling that of vitamin  $K_1$  and  $K_2$  and having a small vitamin K activity, also occur in nature. This holds true for the orange pigment of the tubercle bacillus phthiocol 2-methyl-3-hydroxy-1,4-naphtoquinone. This substance has a small vitamin K activity as first shown by Almquist. (Order of magnitude: 50,000 units per Gm.). In henna leaves there is a brown pigment (Lawson) 2-hydroxy-1,4-naphtoquinone with a similar small K activity. This substance and also phthiocol are too weak, however, to have any importance as natural sources of vitamin K.

Of much greater importance is it that certain artificially prepared naphtoquinone derivatives are active as vitamin K. This was first shown by Ansbacher and Fernholz in 1939 for 2-methyl-1,4-naphtoquinone. This substance is more active than vitamin  $K_1$  (about 25 million units per Gm.). Also the diacetate of the corresponding hydroquinone is rather active (14 million units per Gm.). This and certain other derivatives of 2-methyl-1,4-naphtoquinone have the advantage of being more stable towards light and oxidation by air than the quinone itself. Neither have they the burning taste and irritating properties of the free quinone. In  $K_1$  and  $K_2$  the long aliphatic side chains give these compounds a pronounced lipoid character. This slows down the burning taste as well as all possible reactions in the aqueous phase of the living cell. Even water-soluble derivatives are active. This, for instance, holds true for the sodium salts of the diphosphate or the succinate of 2-methyl-1,4-naphtohydroquinone. Also the sodium salt of the diphosphate of vitamin  $K_1$  is active. Other water-soluble compounds with high K-activity are 1-hydroxy-2-methyl-4-amino-naphtalene-hydro-chloride and 2-methyl-1,4-naphtoquinone-3-sodium-sulfonate. The vitamin K activity is not confined to the naphtoquinone structure alone; also some benzoquinones and even anthraquinone have a slight activity. The features of the constitution which are particularly favorable to a high activity are, however, a naphtoquinone nucleus with a methyl group in the 2 position.

It would be of great importance if vitamin K could be determined by chemical or physical means alone. In highly purified concentrates it is possible to use ultraviolet absorption but this cannot be used for testing food constituents and

the like. The color reaction has the same disadvantage and in addition thereto the color is very unstable. Fieser and coworkers have recently reported that vitamin K can be determined by means of the polarograph. They have also proposed a method by which the quinones are catalytically converted into hydroquinones which are then determined by oxidative titration.

*Mode of Action of Vitamin K*—Vitamin K is in some way or other necessary for the maintenance of the normal prothrombin level in the blood. When the vitamin is given intravenously, it is possible to study the effect at different intervals from the moment of the introduction into the blood stream. It is thereby revealed that the action does not begin instantaneously, but requires a certain time for its development. If the prothrombin content is about 1 per cent of the normal value at the starting point, it takes about 5 hours to raise it to 50-100 per cent, assuming that a sufficient amount of vitamin K is injected. The prothrombin is completely normal or slightly supernormal the day after the injection. Thereafter it begins, as a rule, to decrease gradually. The rapidity of the return is greater when small amounts are injected. When vitamin K is added to the blood from a K-avitaminous animal *in vitro* no improvement of the prothrombin content is observed, even if the vitamin remains in contact with the blood for many hours at body temperature before the clotting power is tested. This observation suggests that the action of the vitamin takes place in the tissue cells.

There is strong evidence for the assumption that the action of vitamin K is performed in the liver. Andrus, Lord, and Moore (1939) have ectomized the liver in normal dogs and studied the level of prothrombin in the blood with and without ingestion of vitamin K and bile salts. They found that the prothrombin decreased in both cases. Many other observations show that the liver is concerned with the formation of prothrombin. Thus, Warner reported a decrease in prothrombin after removal of 2/3 of the liver in rats. Intoxications involving severe damage to the liver also lead to a fall in prothrombin. This is found, for instance, after ingestion of chloroform (Smith, Warner Brinkhous 1937) or spoiled sweet clover hay (Schofield 1922, Roderick 1929). Vitamin K does not prevent or cure the hypoprothrombinemia met with in these intoxications.

As to the way in which vitamin K affects the formation of prothrombin, two alternatives must be considered. The first is *whether vitamin K is a constituent of prothrombin*. Prothrombin, so far as is known, is a protein; it accompanies the globulins in many precipitation reactions and does not dialyze. Therefore, vitamin K cannot be identical with prothrombin. But one could imagine that vitamin K might enter the prothrombin molecule as a prosthetic group, much as heme does in hemoglobin. This is, however, not very likely. If vitamin K is present in the prothrombin molecule, one would expect that prothrombin itself would act as vitamin K, so that the peroral ingestion of prothrombin would cure the hypoprothrombinemia of K-avitaminous animals. Experiments in which we precipitated the prothrombin from large amounts of normal hen's plasma (at pH 5.3) did not show any vitamin K activity at all. Further, if the rather different quinones which may replace natural vitamin K should simply be built into the prothrombin molecule, one would expect that different prothrombins would result which would react with different speed in the coagulation process. This has not been found to be the case.

The most likely explanation of the action of vitamin K is therefore the second alternative: *that the vitamin enables certain cells to produce prothrombin*. The mechanism of the action is unknown. Perhaps the vitamin takes part in a redox process, but this is not easy to investigate. Bernheim and Bernheim have shown that vitamin K-like substances catalyze the formation of SS groups from SH groups in cysteine. It remains to be shown whether a similar process is involved in prothrombin formation. Vitamin K does not appear to have any other effects in the higher animals than that of the formation of prothrombin. It does not appear to promote growth.

As to the K-avitaminosis in *different species of animals* the following may be said: while the disease is most easily and regularly developed in chicks, young geese and ducks, by giving them a K-free diet, *rats* may become just as ill as chicks, but in a group of rats many individuals may resist for a very long time. This is assumed to be due to individual differences in the supply of vitamin K from the bacteria of the large intestine, probably in connection with coprophagy. *Rabbits* have been observed to get the disease only to a moderate de-

gree. Perhaps this may be due to the fact that these animals regularly eat feces directly from the anus during the night.

The *absorption of vitamin K from the intestine* is a point of considerable interest. Several investigators have observed hemorrhages in rats, in which the outflow of the bile into the intestine has been cut off by ligature of the bile duct or by a complete bile fistula. (Vadsteen 1936, Greaves Smith 1937). These investigators showed that the deficiency in blood coagulation resulting from a bile fistula could be eliminated by giving the animals a diet very rich in vitamin K. These experiments suggested the importance of bile to the proper absorption of vitamin K. In our laboratory, we have ligated the *ductus choledochus* in chicks and cured the resulting coagulation deficiency by intravenous injection of vitamin K. It could also be shown that the effect of a given dose of vitamin K is quantitatively the same whether the K-avitaminosis is due to lack of vitamin K in the diet or to ligature of the *choledochus*.

The first instance of a hemorrhagic disease in *man* which was recognized as a K-avitaminosis was the cholemic bleeding tendency which constitutes a great danger in operating on patients with obstructive jaundice. The occurrence of lack of prothrombin in connection with obstructive jaundice in patients in which this condition has persisted for some weeks, has been demonstrated by Quick and coworkers, 1935, by Hawkins and Brinkhous, 1936 and was also found by Dam and Glavind, 1938. The fact that this hypoprothrombinemia could be cured by suitable treatment with vitamin K was shown independently by Warner, Brinkhous and Smith, and by Butt, Snell and Osterberg, and by Dam and Glavind during the first months of the year 1938. Since then, the practical utilization of this discovery in surgery has been tried by a large number of surgeons, and has been fully established. It is an old experience that the critical days where profuse bleeding sets in often occur some days or a week after the operation and after the return of the bile to the intestine. This may be explained in the following way: it is the *bile acids* which are of importance in aiding the absorption of all fatty substances from the intestine. According to Ravdin, and Breusch and Johnston, 1934, and others, the bile acid content of the bile is very low during the time immediately after the obstruction to the outflow of bile has been removed because

the ability of the liver to produce bile acids has been diminished by the disease. A prolongation of the period with low absorption of vitamin K is thereby afforded. It is also of importance that the food intake and the content of the intestine is minimal in the days after the operation, whereby the formation of vitamin K by bacteria is reduced; this may be the decisive factor when no reserve of vitamin K is present.

We have followed cases where the prothrombin was completely normal before the operation, which nevertheless took a fatal course, because without treatment, the prothrombin dropped to 10 per cent in the course of 6 days and lethal bleeding resulted. Vitamin K treatment is therefore necessary in all cases where patients with obstructive jaundice are to be operated upon, even if risk of bleeding does not occur until the prothrombin has fallen to a certain degree—about 20 or 25 per cent.

The treatment is most conveniently carried out by giving the patient a water-soluble vitamin K substitute in the form of tablets every day, beginning 1 or 2 days before the operation and ending 14 days after. If a natural fat-soluble vitamin K is used, it is necessary to give bile acid, approximately 500 mg. of desoxycholic acid, simultaneously with the vitamin in order to secure absorption. In cases where operation must be carried out with the slightest possible delay, the water-soluble preparation is given intravenously by direct injection into the blood stream at least 6 hours before the operation. The dose may be 1 or 2 units per Gm. body weight, corresponding to 5 or 10 mg of one of the water-soluble esters for an adult patient. Overdosage does not afford any danger of a too high coagulability of the blood because vitamin K cannot raise the prothrombin content above the normal, but overdosage of certain artificial preparations of several thousand times the therapeutic dose may have other disadvantages as shown in animal experiments. (Influence on respiration, vomiting, albuminuria, porphyrinuria.) Theoretically, the most rational way of combating the K-avitaminosis in obstructive jaundice would be the old use of bile, because it is primarily the bile and not vitamin K which is lacking in the intestine. It would, however, require ingestion of bile several times during the day to imitate the natural outflow of bile, and ingestion of much bile by patients with obstructive jaundice would also involve intoxication. It is not possible to substitute vitamin K therapy by the



old bile therapy. The same holds true for blood transfusions. The amount of prothrombin supplied by a blood transfusion is directly proportional to the quantity of blood introduced. This can give only a fraction of the normal amount of prothrombin and, as shown by both Quick and the Mayo Clinic, the prothrombin introduced disappears from the blood in some hours.

*Certain forms of hypoprothrombinemia cannot be cured by vitamin K.* This was found by the Iowa workers (H. P. Smith and his associates and by Snell and coworkers at the Mayo Clinic.) for cases of severe liver diseases where the parenchyma of the liver was severely damaged (Laennec's cirrhosis, Banti's disease). After the finding of the K-avitaminosis in connection with obstructive jaundice and complete bile fistula, it was to be expected that this condition would be found also in connection with other diseases where the absorption of fat and fat-soluble vitamins is reduced. The hemorrhagic diathesis met with in certain cases of sprue, an intestinal disease in which fat passes the intestine unabsorbed, was, therefore, suspected to be a K-avitaminosis. The relation to the lack of one of the vitamins was considered many years ago by Fanconi and this has been found to be the case. Engell, 1928, showed the presence of hypoprothrombinemia in sprue, and Hans Hult, 1939, definitely demonstrated the response to vitamin K. The Mayo Clinic workers have further found a lack of vitamin K in cases of *colitis ulcerosa*. This is explained by the abnormal condition of the intestinal epithelium and by the rapid passage through the intestine, whereby the absorption is reduced.

*The purely alimentary K-avitaminosis in man, that is, lack of vitamin K because of an insufficient amount of the vitamin in the diet, is presumed to be a rare disease because of the supply of vitamin K by intestinal bacteria.* Chicks require approximately 1 unit of vitamin K per Gm. body weight per day. If the requirement of man, calculated per Gm. of body weight, is the same (and there is reason to believe that it is not much different) then an adult person should be furnished with 50,000-70,000 units per day, including the vitamin supplied by the bacteria. This quantity is contained in about 1000 Gm. of fresh spinach, a fairly large amount to eat. There is no doubt that an ordinary diet furnishes much less, but nevertheless it does not give rise to hypoprothrombinemia and hemorrhage. As far as I am aware, experiments with an entirely K-

free diet have not been made with human beings, but Kark and Lozner (Harvard University) report that they have observed K-avitaminosis in patients living on a very restricted diet.

The most interesting occurrence of K-avitaminosis in man is that of the *new born* infant. Reduced coagulation power of the blood of new born infants has previously been reported; Whipple has described such cases in 1912 and Brinkhous, Smith, and Warner found in 1937 that this was due to low prothrombin content. They further showed that in infants with actual bleeding the prothrombin was particularly low. That a hypoprothrombinemia, which may be prevented or cured with vitamin K, occurs in new born infants in the first week after birth, was first recognized by Waddell and co-workers at Virginia University Hospital, and independently found by Dam, Tage-Hansen and Plum, Copenhagen, as well as by Nygaard, Oslo, and Shettles, Delfs, and Hellman, Johns Hopkins, 1939, and Quick and Grossman, Milwaukee. This finding was further studied by a large number of workers, particularly after micromethods for the examination of the blood had been introduced. There is a marked prolongation of the coagulation time already at birth, but the long coagulation times are most frequent on the 3rd day. Proper ingestion of vitamin K raises the prothrombin to approximately normal values in 24 hours and brings the patient out of the danger zone in about 6 hours. The treatment may consist in giving a few mg. of the 2-methyl-1,4-naphto-hydroquinone-diphosphate or disuccinate or another water-soluble compound orally, intramuscularly or intravenously. Cases of cutaneous hemorrhage, melaena or hemorrhage from the umbilicus may be successfully cured in this way, provided the infant lives until the effect of the vitamin has been developed.

As to the treatment of intracranial hemorrhages, the following may be said: intracranial hemorrhages in the new born are of very great importance, with respect to their influence on the mortality among infants and to the diseases (hydrocephalus, for instance) which may develop as a consequence of this form of hemorrhage. The number of still born babies or infants dying during the first few days after birth amounts to 5-6 per cent of all living born. In Denmark, for instance, (population 4 million) the yearly figure for still born and early deaths is 3500 to 4200 out of 70,000 births. It is not



easy to say exactly how many of these deaths are due to intracranial hemorrhage; several investigators believe that this holds true for 10-30 per cent which means that about 1 per cent of all new born infants die from intracranial hemorrhage during or shortly after birth. The Danish obstetricians Leopold, Meyer, and Hauch found in their old investigations (from the year 1912) among 1200 births, 28 cases with rupture of the tentorium. In 13, this was estimated to be the immediate cause of death. Rydberg found by autopsy on 75 new born infants (out of 1300 births) macroscopically visible hemorrhages in the brains of 28. The microscopical examination revealed hemorrhages in almost all of them. There is no doubt that the mechanical trauma during birth is an important factor in the development of the intracranial hemorrhage. It cannot, however, be the only cause. Intracranial hemorrhages with rupture of the *dura mater* have been observed even after cesarean section. It has also been observed to develop in infants several weeks after birth, in cases where the prothrombin did not rise as it normally does. The 17 cases of intracranial hemorrhage which have been examined in Copenhagen by Plum and Dam, were all in the low prothrombin group.

The possibility of preventing or curbing this form of hemorrhage by vitamin K treatment is therefore a question of great importance. Of our 17 cases, 3 were not treated and died. Of the 14 treated, 6 survived. It is obvious that the success of a curative treatment depends upon whether larger vessels have ruptured and upon the size and location of the hemorrhage. A preventive treatment must have much greater chances of success. The most logical form of preventive treatment is the treatment of the mothers. This has been attempted by several investigators. I shall mention here only the experiments made in Copenhagen by Larsen and Plum. They gave 20 mg. of a water-soluble vitamin K preparation (300,000 units) to the mothers orally a few hours before the pains set in (they had at that time not enough of the preparation to begin the treatment long before birth.) This treatment prevented a fall in the childrens' prothrombin below 20 per cent of the normal value during the first 6 days after birth. Hellman and coworkers at Johns Hopkins University Hospital have shown in a very extensive investigation that the rate of death among the new born is reduced very materially by this

kind of treatment. The treatment securing the best possible result should be the combination of the treatment of the mothers with the treatment of the baby just after birth with 1 dose of about 5 or 10 mg. of the preparation.

We will now turn to the *cause* of the lack of vitamin K in the infant. We shall begin with the mothers. The investigations of Tage-Hansen and of Thordarson have shown that the mothers' prothrombin is increased at the end of pregnancy; the increase may amount to 50 to 100 per cent of the value before pregnancy. This does not suggest that the mothers lack of vitamin K. Nevertheless, the new born child is K-avitaminous. This may be explained in different ways. The simplest explanation would be that the placenta does not let vitamin K pass freely into the circulation of the *foetus*. It might also be that the organism of the mother is using more vitamin K than usual because of its enhanced production of prothrombin, so that only an insufficient amount is left for the *foetus*. Finally the *foetus* or new born child may for some reason have a higher need for vitamin K in order to produce the normal amount of prothrombin. It will not be difficult to find out which of these suggestions represents the true explanation.

There is a seasonal variation in the severity of the hypoprothrombinemia of the new born. Waddell has shown that it is most severe in February and March. This would suggest a relation to the diet. Dr. Plum and I have made some further observations as to the frequency and degree of the hypoprothrombinemia of the new born. In cases where the mothers have a pronounced albuminuria, the hypoprothrombinemia is worse. And further, the children which are icteric at birth have a little higher coagulation power of the blood than those which are not icteric. The icteric infants might eventually be able to produce a little more prothrombin. That the prothrombin level decreases further during the first days after birth is not surprising, because the supply of vitamin K to the infant is only very small. Human milk contains only about 0.3 units vitamin K per cc. This is a very small amount because the infant is expected to need at least 3000 units per day in order to have normal prothrombin. It would be necessary for the baby to drink about 10 liters of milk per day if the milk was the only source of the vitamin. Further, there are no bacteria in the intestine of the *foetus*.

The reason why the prothrombin level normally rises again in the course of some days is to be sought in the increasing bacterial flora of the intestine together with the increasing volume of substrate for the bacteria to act upon. At birth, the intestine is practically sterile, but it only takes a few days to build up a flora rich in *coli*, which are strong vitamin K producers. Feces from the first 4 days contain only a small amount of vitamin K (about 3 units per Gm.), whereas the feces of adults contain much more. *Bacterium coli* cultivated on peptone beef extract may contain several thousand units per Gm. of dry matter. The filtrate from the bacteria is practically free from vitamin K. In contrast to these organisms, *Bacillus acidophilus* was found to be very poor in vitamin K. This tends to show that a radical change in the bacterial flora suppressing the putrefactive bacteria might be dangerous, if the food does not contain enough vitamin K.

The K-avitaminosis has also been seen in infants aged 2 or 3 months, suffering from *icterus gravis* and anemia. The explanation of the origin of the K-avitaminosis in these cases has, however, not been given.

I shall conclude this survey of the role of vitamin K in human pathology by mentioning that it has no effect at all in *hemophilia congenita*, *thrombocytopenia*, *fibrinopenia*, or in scurvy, that is, in such hemorrhagic diseases which are not due to low prothrombin.

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## Notice

Pharmacy Program, American Association  
for the Advancement of Science  
Dallas, Texas, Monday, December 29.

The Dallas meeting of the A. A. A. S. will be held during the week, December 29, 1941 to January 3, 1942. A morning and an afternoon session of the Pharmacy Sub-section of the Medical Sciences Section is planned for Monday, December 29. Authors who wish to present papers are requested to send in titles as soon as possible. Further details of plans for the meeting and program may be obtained from the chairman.

Glenn L. Jenkins, Chairman  
College of Pharmacy  
University of Minnesota.

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"The most successful program is a continuous one."—  
Edward Spease.

## The Fundamental Sciences---Their Role in Medical Progress\*

ANTON J. CARLSON

Professor of Physiology and Chairman of the Department, University of Chicago  
Chicago, Illinois

To give the first Elias Potter Lyon Lecture, on this significant occasion, is to me both a personal privilege and a great honor. Thirty-five years ago I became acquainted with Dean Lyon at the University of Chicago and at Woods Hole. Almost every year since then I met Dr. Lyon in state or national gatherings of physicians, educators and investigators in the medical field. He was a pupil of that stimulating rebel in biology, Dr. Jaques Loeb. After several years of apprenticeships at Rush Medical College and at the University of Chicago, Dr. Lyon became professor of physiology and later Dean of the Medical School at the St. Louis University. Twenty-six years ago, with years of experience and funds of accumulated wisdom, he cast his lot with the University of Minnesota, as professor of physiology and Dean of its Medical School. Dean Lyon has a large share in the significant growth in the quality of instruction and in the quantity of good research coming from this Medical School during the past quarter of a century. But, in my judgment, the University of Minnesota entrusted Dean Lyon with an almost superhuman task; namely, the leadership of the then preadolescent medical school, and the leadership of the important department of physiology. These are all day jobs for two superior men. That Dr. Lyon carried these two responsibilities with the results now in evidence, speaks volumes for his industry, his wisdom, his gift of leadership and his sense of humor.

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\*This is the first Elias Potter Lyon Lecture and was delivered as one feature of the program marking the fiftieth anniversary of the founding of the Medical School of the University of Minnesota. It has been published in the Minnesota Alumni Weekly and the Journal of the Association of American Medical Colleges. It is reprinted here by permission of the author. While Dr. Carlson in this article discusses the role of the fundamental sciences in medical progress in the broader sense, what he says applies equally as well to pharmaceutical progress. It is inspiring to every worker in the basic sciences to view their role through the eyes of one of the world's most distinguished physiologists.  
—Ed.

Dean Lyon had a sound conception of the best means in and the true goal of medical education in a democracy. Medical students had in Dr. Lyon an inspiring teacher, his colleagues a fair, sympathetic and understanding administrator.

I am speaking to the memory of Dean Lyon, and that memory will not permit me the slightest deviation from the truth. Elias Potter Lyon may not rank with the giants of the earth, especially in medical research, but his conspicuous unselfishness, his industry, his sense of justice, his never failing kindness, and his salty but kindly humor are worthy qualities, challenging us all during the future years. He was "deaning" for over a quarter of a century, and at the end he was still a human being.

To talk to my medical colleagues in this state, or even to the medical students on this campus on the importance of the fundamental sciences in medical progress would be not only presumptuous on my part, but about as fruitful as "carrying coal to Newcastle." My real audience tonight are laymen, such as Governor Stassen, President Ford, and all the people of this state through whose generosity, understanding and labor the Medical School on this campus has attained its present capacity for service to man.

The mysteries of the starry heavens and the urgencies of human pain seem to have made man pause and ponder at the very dawn of reason. At any rate, the earliest accounts we have of man trying to understand himself and the universe deal with astronomy and with human sickness. The earliest, sporadic achievements in medicine here and there among the peoples of the earth, such as the use of quinine against malaria by the South American Indians, the use of toad skin for dropsy, and vaccination against smallpox by the Chinese several hundred years before Jenner, were steps in the control of, rather than in the understanding of disease. The Greeks had Galen, and Galen was on the right road, but he had few real followers for a thousand years. Hence, medicine, in the sense of discovering the causes and working out the means of controlling and preventing human ills, dates back only a few hundred years. And the ascending curve of achievements in medicine closely parallels the progress in the fundamental sciences of biology, chemistry and physics. This is not an accidental parallel, as we shall see. Nor is the parallel ex-

plained entirely by the fact that all science is one in method, and the human brain is the catalyzer of them all. The reason is: biology, chemistry and physics have furnished and will continue to provide many of the data, the hypotheses, and the tools necessary for the next step in the unending fight against disease.

Which are the "fundamental sciences," and what are their roles in medical education and medical practice? Human anatomy, animal physiology, biochemistry, bacteriology and pharmacology are historically the legitimate offsprings of medicine, and these sciences still dwell largely on the old paternal homestead. Perhaps it would be more correct to call biochemistry an adopted child—adopted from chemistry. They are now an integral part of modern medical education, medical practice, medical research, hence included in the term medicine. But human or animal physiology, at least, is as important in our secondary and college education as it is in medical education.

We are slowly realizing that at all stages of education the traditional "three R's" must be rounded out with an "H", which stands for, not hallelujah, but *Health*. And health education is more than the establishment of so-called health habits, like love for the tooth brush, fear and hatred of gin and whiskey. Education is more than habit formation, more than cerebral canalization to the centers for love and hate. Education means understanding. Health education means understanding the living body, the living machinery of man, the known causes of disease or ill health, and the known ways of keeping fit. This is the contribution of the medical sciences to primary and general education in our democracy, as yet only partially either sensed or achieved.

The imparting of the traditional three R's to youth is by the nature of the case largely a matter of dogma and drill. But drill and dogma are largely futile in health education. Health education cannot be achieved by the memory route, as can the alphabet, the multiplication table, or the church catechism. Health education involves the A, B, C's of science and the scientific method, both on the part of the teacher and the pupil, that is, controlled experimentation, rechecked observation, repeatedly verified cause and effect relations. It is the development of the skill in finding "facts," the use of reason based on facts rather than an exercise of faith based on unverified dogma.



**BOTANY.**—What about the other biological sciences, botany, zoology, and the union of these two, with a sprinkling of geology and climatology, and constantly implemented by chemistry, namely agriculture? Do these play any role in modern medicine? Those who look no deeper than to the surface of things may say that the potato and the pine are so different from man, the self-styled "crown of creation," that the scientists who deal with the former cannot possibly produce anything of importance to human medicine. Let us pause and see. In the first place, the plant groups: bacteria and fungi are common agents of debilitating and deadly human disease. But more fundamental still: The essential machinery of reproduction, growth, nutrition, respiration, heredity and death is the same in the plant and in man. The plant is subject to disease and death, much as man, from defective heredity, malnutrition, poisons, bacteria, animal parasites and viruses. Plants take up from the soil and concentrate in their seed and other structures substances toxic to man, such as selenium and fluorine. Man secures much of his food from the plant kingdom, and the quality of that food (for example, vitamins, iodine, iron, the nature of the proteins, etc.) is of great significance to human health. Many significant medicines like quinine, ephedrine, digitalis, are manufactured by the plants. But perhaps, it is in the studies in cell life, on the machinery of heredity, and on the mechanisms of immunity to disease in plants that the science of botany attains its greatest significance to human medicine. So the botanist is more than a "fellow traveler" to the physician, he is a fellow worker, that is, if the botanist will have it so.

We who labor in the field of human and animal health and disease have for fifty years been greatly puzzled by the seemingly abrupt and adult appearance of the complicated hormone machinery, specifically beginning with the vertebrates. The riddle has been solved for us in the last ten years, at least in part, by the plant physiologists. Many of these hormones are present and working in the tissues of the plant. In the vertebrates their production has become confined to specific organs or glands. It is no longer so perplexing to find that the pussy willow produces chemical messengers not so different from those produced by the ovaries of women, and the testes of men.

**ZOOLOGY.**—It is true, man can get tuberculosis and undulant



fever from the cow and the goat, trichinosis from the hog, deadly glanders from the horse, Asiatic plague from the gopher and the rat, tularemia from the lowly rabbit; tapeworm from the fish, spotted fever from the wood tick, malaria and yellow fever from the mosquito, typhus from the louse, and deadly fever from the parrot and this is just the beginning, not the end of the list. But these are not the things that make zoology so important to medical advance. The significance of zoology to medicine can be sensed, even by intelligent laymen, in the following facts:

1. The fundamental identity of body structure and body machinery in man and animals.

2. The essential identity of the machinery of heredity in man and in animals, and the importance of heredity in the susceptibility to disease, in the stability of the mind, in growth and longevity, etc., of man.

3. The frequent appearance of spontaneous diseases in animals, such as infections, cancer, dietary deficiencies, liver, heart and arterial diseases, brain and body failings in the ageing process etc.

4. Experimental diseases, such as infections, the numerous and important dietary deficiency diseases, diseases due to deficiency or excess of the hormones in body can be induced in the animals, domestic and wild.

5. It is safer and faster to standardize new and old drugs on animals rather than on man.

The significance of these five zoological categories to progress in medicine are almost self-evident even to laymen with a speaking acquaintance with history and with the scientific method. Man is an animal. Some people believe, others hope, he is also something more. At times, man behaves as if he were something less. There may still be some uncertainty both as to facts and factors in biologic evolution, but the essential identity, in health and in disease, of the brain, the heart, the gut, the lungs, the liver and the kidneys of man and the animals is as certain as the product of two times two.

Unfortunately, we do not transmit our own understanding and knowledge with our germ plasm. We can give our children only the capacity and the facilities to learn. No matter how great our medical knowledge today, our children of tomorrow start exactly at zero. So each generation of medical students must secure its fundamental training in the nature

of health and the nature and control of disease on the animal, living and dead.

History tells us that whenever we succeed in reproducing a baffling human disease in the experimental animal we start to go places, and go fast. The fundamental experiment of the immortal Pasteur was on sheep, not on men. Some serious human ailments can, at present, not be diagnosed with certainty without resorting to tests on living animals. The mouse and the rat, the guinea pig, and the monkey are necessary material in the modern medical school, the modern hospital, the modern medical research institute. Here I pause to remark that all of these agencies of medical progress in these United States today find themselves hampered by inadequate animal quarters for medical teaching, medical research and medical service to man. Even the wisest medical statesman could not foresee the expanding needs of this type of medical aids for tomorrow. Every unit of the commonwealth: city, county, state and nation, must nurture, not hamper, this important avenue of medical advance, the use of animals in medical education and medical research. Are the citizens of Minneapolis and of St. Paul aware of this duty toward the great medical school in their midst?

PSYCHOLOGY, so far as it has succeeded in cracking its confining carapace: traditional philosophy, is a biologic science, has rendered and will render great service to medicine in the direction of understanding man.

PALEONTOLOGY and ANTHROPOLOGY may shed light on the antiquity of disease. These same sciences may some day tell us how long ago our ancestors were something less than apes, and hence how long the road ahead till we, their children, shall have earned the name: *Homo sapiens*.

PREVENTIVE MEDICINE is the natural child of fundamental medical research and social statesmanship. If in many medical schools this child is anemic, this mainly is due to lack of medico-social statesmanship. As regards a really comprehensive and effective disease preventing program for all the people, some progress is being made with smallpox, typhoid fever, malaria, tuberculosis, syphilis, dietary deficiencies, etc. But by and large, the perplexities confronting the students of nationwide disease prevention today seem as discouraging as did the control and the cure of individual sickness to the doctor of a hundred years ago. Ignorance, irresponsibility, poverty,

and greed are formidable obstacles to the health of the individual. Nationwide, these seem insurmountable, except to the few of us who may be killed but never conquered. But the physician alone cannot win this war, nor can it be won without him. This program involves the regulation of industry by the needs of health; above all, it involves a very high level of education and sense of social responsibility on the part of every citizen. It will not be achieved by law or force. If and when it comes, it will be by the action of free men, based on understanding. It involves adequate food production (hence agriculture) and distribution (hence commerce), adequate housing, adequate work for all who can and will strive, and the sterilization of those who cannot and will not do their share of the world's labor.

CHEMISTRY.—At this point Dean Diehl and his colleagues responsible for the program of this semicentenary probably think I am slipping. Except for this evening, the rest of the offerings may suggest that chemistry and physics are the only sciences fundamental to medicine. With malice aforethought, I have followed the model of the pastor who divided his text in two parts: First, what is in the text; second, what is not in the text, and he discussed the second part first.

We have volumes on the role of chemistry in medicine, and I have a feeling of mental paralysis, not because of paucity but by the very abundance of material and illustrations. Man is a chemical and physical machine. Some like to think he is more than that. Maybe so. Some day, when we know more about chemistry and physics we may actually know. But that the same chemical substances and chemical energies operate in man and in the rest of the universe is now abundantly proven. We owe to chemistry many of the methods necessary in the isolation, analysis and comprehension of the processes of health, as well as disease, in the identification of chemicals that cause disease, in the manufacture and purification of chemicals that aid both in the prevention and in the cure of disease. The microscope revealed the cell as the present unit of life, but it remained for chemistry to reveal its composition and its energies. Just picture to yourself where the physician and his patient would be today, without our present knowledge of the chemistry of respiration, of foods and digestion, of blood and urine, of growth, of hormones, of bacterial toxins and immune bodies, of such important remedies as insulin,

arsphenamine, sulphanilamid, and vitamins? Several hundred years ago the brilliant but erratic Paracelsus said: "The true use of chemistry is not to make gold but to make medicines." Today we would say, the true use of chemistry is not to make gold, not even to make medicines, but to aid man in the understanding of his own life, and the universe about him.

PHYSICS.—Today the line separating chemistry from physics is very faint indeed. These two sciences unite in probing the atom, in harnessing the electron. All life processes in health and in disease involve or consist in chemical change, and every chemical change has physical concomitants. The human eye, the human ear are in fact physical machines, worked by the physical forces of light and sound. The discovery of electrical energy did more for biology and medicine, than it did for industry. For millions of years there has been going on in all living things an adjustment to such physical factors in the environment as barometric pressure, oxygen concentration, humidity, heat, light. And there is no good reason to think that this is the end of the list.

Where would medicine be today, without the microscope? The X-ray, the form of physical energy, discovered just a minute ago, considering man's terrestrial time, is very nearly an essential in the diagnosis of gastric ulcer, tuberculosis of lung and bone, tumors, rickets, brain abnormalities, diseases of the gallbladder, the kidneys, the heart and the bloodvessels. Physiotherapy is in its infancy. In our present scanty understanding of cancer, X-ray and radium are helpful aids in its control. The ingenious contrivances given us by the physicists who perfected the radio have yielded a new method for studying disorders of the brain.

We need say no more. If these examples do not convince you that advances in chemistry and in physics constitute the very air, water, and food requisite for advance in medicine, I might as well save my breath and your time. A few years ago an able physicist told me that in his opinion, all physicists should abandon their research in pure physics, and for the next generation focus their brains and skill on biology and medicine. In my humble opinion, that would be a great mistake. Let a Compton and a Millikan continue to capture and dissect the elusive cosmic ray, from the top of the stratosphere to the bottom of the ocean. In the long run, that will be of

greater service to medicine, than if such men, almost innocent of biology, should turn their attention to cancer. We need more, not less, brains in every science.

But the chemist and the physicist have an easier task than the physician. In their dealings with atoms and energy they are the least hampered by the human equations of ignorance, superstitions and misunderstandings of his fellow man. Not so the doctor. When he tries to protect children against smallpox, or tries to get an understanding of the maiming and killing disease, high blood pressure, by experiments on dogs, peculiar people, like the anti-vaccinationists and the anti-vivisectionists say "nay, nay," with all their voices, all their votes, and all their wealth. And yet, the doctor must carry on.

So we see that medicine, specifically the science of medicine, is a hungry, omnivorous, but, I hope, humble and grateful bantling. He leans heavily on all science, but specifically on biology, chemistry and physics. Like the ameba and the sponge, medicine absorbs nutrients from the boundless sea of sciences, and does its utmost to organize this growing mass of facts and skills to the understanding and the service of man.

If this brief survey of the role of the fundamental sciences in medicine is even approximately correct, several consequences seem to follow, consequences so pregnant in their portends as to make us all pause and ponder:

1. Medical education and medical research are becoming increasingly complex, time consuming, and costly. But we can see no other way. There are no short cuts.

2. The conscientious practice of modern medicine is becoming so complicated, and costly as to almost exceed the intellectual capacity of the ablest men. Again, I see no cure for this. Who shall bear the necessarily increased cost of modern medical service, the individual or society? I do not know the wisest way.

3. No university will be able to maintain a medical school of distinction, without great men also in biology, chemistry and physics. And pygmies in the humanities and the social sciences aid medicine not at all.

I would put first things first in this field, and that is, *able men*. In the past third of a century, I have listened to endless discussions on the minutiae of the medical curriculum. I have seen drives for bigger and better teaching and research hospitals, bigger and better teaching and research laboratories.



I have listened to plans for "coordination of research" from people who do not have their milk teeth, not to speak of their wisdom teeth, of research. Talk comes easy. But real medical research and conscientious medical practice take everything that the ablest of us can deliver. It is not a union schedule of forty hours a week, but a sweating proposition of eighteen hours a day. And some universities, some university medical schools are still in the "stone age," aided and abetted by both public and private funds. Look at the piles of brick and mortar, steel and stone towering toward the sky on almost every state and city university and college campus the last ten years, largely through federal funds. In the meantime, how many new farthings have been invested in men in these institutions, in first rate men? Look at the record, and weep! To my knowledge, big buildings and small men have never made great institutions. But big men have frequently added mightily to our understanding of life in health and in disease, in primitive surroundings and with meager equipment. For years and years, it was my great privilege to walk and talk with Michelson, Millikan, and Compton, Neff and Stieglitz, Chamberlin, Moulton, and Moore, Whitman and Lillie, Loeb and Coulter, Billings and Hektoen, David Starr Jordan and William Rainey Harper. Only two of these challenging spirits were medical men. If I have in any way contributed to medical education and medical research, this is due largely to the example and the challenge of these men.

The University of Minnesota Medical School, though fifty, is still in its infancy. Fifty years ago the echoes of the Brown man's war whoops had scarcely died on your prairies, and the bleached buffalo chips still littered the plains. The sod hut of the first settler, and the song of the ax in your primeval pine forest to the north were harbingers of a new era in man's conquest of nature in these parts. It takes labor and sweat, patience and wisdom to conjure forth the fruits of the soil, and the iron from the bowels of the earth. In these qualities the Minnesota pioneers, and their children have demonstrated their worth.

But it takes infinitely more labor, more wisdom, more patience, and more cash to establish and maintain that social and intellectual soil and climate necessary for the development of the finest qualities of man. Science, medicine, today and tomorrow, are a part, but only a part of that soil and



climate. The farmer, the man in the mart, the teacher, the statesman can also significantly accelerate these processes, but only if the seed sprouts in the understanding of the common man.

Tonight, your Medical School rejoices that a man, Dean Lyon, passed this way. When every farmer leaves his acres a little better than he found them; when every worker leaves the imprint of human honesty and human dignity on every task performed, however humble; when every lawmaker helps to render human relations a little more equitable; when every judge leaves his court a tradition of a little more justice; when every doctor, every teacher, every investigator work more for love and less for hire; when every statesman leaves the path of compromise, conciliation and approximate justice a little more accessible and secure, we shall have something greater than fat cattle, marble palaces, tall buildings, radios defiling the pure ether with black lies, and mighty airships spewing pain and death on women and children. Even then, we shall not have perpetual health, not even perpetual youth. But we shall be well on the road to earn the designation, wise men. We shall still struggle for life and light, but shall have left behind the follies, the fears, and the fights of the jungle.

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"The test of sincerity is to be found in how closely men practice what they preach. By their deeds shall ye know them! The failure to keep words and actions in harmony has been the cause of much injury to pharmacy."—Robert L. Swain.

## The Facilities for the Establishment of a Center of Pharmaceutical Historical Work and Information at Madison, Wisconsin\*

GEORGE URDANG

Director of the American Institute of the History of Pharmacy.

### *Introduction*

It is but natural that the question will be asked, why the American Institute of the History of Pharmacy, unique at least on American soil as it is, and universal in its work and objectives as it intends to be, has been organized at Madison, Wisconsin? The answer is simple. *Madison became the cradle of the American Institute of the History of Pharmacy because it was the only place within the Americas ready for such an institution.*

It offers a unique collection of books, journals and other material of pharmaceutico-historical interest, the necessary general and pharmaceutical atmosphere, and finally the intellectual and substantial preparedness of the people concerned.

The foundation of an Institute of the History of Pharmacy at Madison is, therefore, not a matter of chance, but of destiny. It is the fulfillment of a long and consistent development. It is finally the crowning of the life work of a great man, Dr. Edward Kremers.

### *The Libraries in Madison*

The total number of bound volumes contained in the libraries in Madison open to scientific or public use is about 1,100,000, and the number of pamphlets exceeds 400,000. The bulk of the books, pamphlets, and other material is housed in the general library building on the campus, the remaining ones on or around the campus.

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\*This paper tells the story of the collection of literature and material of historical interest that has been amassed by Dr. Edward Kremers through his long period of service. It seemed to the editor to have great educational value and is published for that reason. It is hoped the paper will serve as a stimulus to those in other historical pharmaceutical centers to write similar articles which will locate the historical material available to the teaching profession and all others interested in the history of pharmacy. The pages of the Journal are open to those who will help in rendering this service.—Ed.

**A. The Pharmaceutical Section of the Library of the University of Wisconsin.**—The Pharmaceutical Section of the Library of the University of Wisconsin is a unique institution within the United States, especially as far as material pertaining to pharmaceutico-historical knowledge and research is concerned. In this regard it is not second even to the Lloyd Library at Cincinnati, and not often equalled in Europe.

The following survey conveys an idea of its contents as far as historically important material is concerned:

The most important *books on drugs* which came down to us from Greek and Roman antiquity (Dioscorides, Paulos of Aegina, Celsus, Galen, etc.) are represented by early prints or, sometimes even in addition, by annotated translations into different modern languages. The same holds true for the medieval and post medieval literature concerned.

The early chemico-therapeutical or *iatrochemical literature* (Du Chesne or Quercetanus, Oswald Croll, Glauber, etc.) is represented to the same extent as are the books on herbs ("Kraeuterbuecher" and "Distillierbuecher") of the 16th and later centuries.

Of the reports mentioned above, the most remarkable are the reproduction of the famous Vienna Dioscorides Codex with the drawings of Krateuas, (5th century), the so-called Badianus manuscript, concerning the medicinal drugs of the Aztecs, and the Hortus Sanitatis, one of the earliest (late 15th century) printed books on herbs and their use in medicine.

Among the literature pertaining to vegetable drugs and especially indigenous American drugs, the collection of different editions of the first scientific descriptions devoted to them, viz. that of Monardes, deserves special attention. The library owns a copy of the very rare original Spanish edition, the Latin translation edited by Clusius (Charles l'Ecluse), and later French, English, Italian and German translations, affording a unique possibility of comparative study and illumination of the terms concerned.

Of special completeness is the collection of *pharmacopœias*, *dispensatories* and *commentaries* and of the formularies preceding them from the Antidotaria Nicolai and the Grabadin of Pseudo-Mesue to the different official pharmacopœias of the 16th, 17th, 18th and 19th centuries, and finally those being in force at the present all over the world. Where early pharmacopœias could not be obtained in original or in reprints,

photostatic copies are provided as for instance of the first issue of the first official pharmacopœia of the European world, the Ricettario Fiorentino (1498) and of the two issues of the first official English formulary, the Pharmacopœia Londinensis of 1618.

The famous Dispensatorium of Valerius Cordus as well as the Pharmacopœia Augustana are represented by different editions. The same holds true for several other pharmacopœias of special importance. The London, The Edinburgh and the Dublin Pharmacopœias as well as the dispensatories intended as commentaries are there in almost complete sets. Of the many unofficial pharmacopœias preserved in the library those of the Frenchmen Charas and Léméry, of the Englishman James, of the Germans Schroeder, (Schroeder-Hoffman), Mylius and Zwelfer may be mentioned.

The different attempts at a Universal Pharmacopœia, purporting to comprehend practically all the official and the most important unofficial formulæ used within the civilized world in the period concerned can also be found in the Pharmaceutical Section of the Library of the University of Wisconsin. There are preserved e.g. Jungken's Corpus Pharmaceutico-Chymico-Medicum Universale (1694), Jourdan's Pharmacopée Universelle (1828), Geiger-Mohr's Pharmacopœia Universalis (started in 1835).

It is almost self-evident but may nevertheless be mentioned that there is a complete set of the United States Pharmacopœia and its American predecessors accompanied by the literature belonging to it.

The French, German, and English *reference-and textbook literature* from the 17th century to the present and, naturally, the respective American literature from its very beginning is excellently represented, whereby the literature on the economical and legal situation of pharmacy has found the same attention as that on the sciences, the technique, and the retail practice of pharmacy.

The collection of *pharmaceutical journals* contained in the Pharmaceutical Section of the Library of the University of Wisconsin is one of the most complete to be found anywhere. The important French, German, English, Italian, Scandinavian, Dutch, etc. journals devoted to pharmacy are preserved in this library in complete or almost complete sets from their very

beginning in the end of the 18th or early 19th centuries until the present or the discontinuation of their appearance.

An experience of the writer of these lines may illustrate the extraordinary completeness of this collection. When working on his History of German Pharmacy (Adlung-Urdang, Grundriss der Geschichte der Deutschen Pharmazie, Julius Springer, Berlin 1935), he wanted to examine the title and the contents of the first copy of the "Almanach oder Taschenbuch für Scheidekünstler und Apotheker" (1780). None of the great libraries in Berlin had this copy and it took some inquiries before it finally could be located in the library of the University of Goettingen. The Pharmaceutical Section of the Library of the University of Wisconsin contains a complete set of the "Almanach" including the very rare first copy.

It seems scarcely necessary to stress the fact that all important American pharmaceutical journals including those with primarily commercial tendency are represented in the library.

The *pharmaceutico-historical literature*, i.e., books and pamphlets on the historical development of pharmacy at large or in various countries or cities, in its special branches including manufacturing and wholesale, on prominent men and events, on special situations, institutions and problems, etc. has been stored on the shelves of the Pharmaceutical Section of the Library of the University of Wisconsin in a completeness which may be equalled only in a very few cases in some other part of the world.

As a special feature the collection of material concerning the role played by *the apothecary in fiction* as well as in the fine arts has to be mentioned.

It is impossible to describe the treasures of this library in full within the frame of a memorandum.

Suffice it to summarize its real meaning and importance by the statement that from the very beginning of the establishment of the Pharmaceutical Section of the Library of the University of Wisconsin about half a century ago up to the present, pharmaceutico-historical knowledge has been its basis as well as one of its main objectives.

**B. The Libraries of the Humanities and the Non-Pharmaceutical Science Departments of the University of Wisconsin.**—The libraries of the University Departments of medicine,

chemistry, botany, physics, zoology, biology, agriculture, engineering, etc. as well as those belonging to the humanities are unusually well equipped with reference books on the history of their special fields and other material of more or less immediate interest to pharmacy. Thus they offer a splendid supplement to the stock of the pharmaceutical library.

Only recently the University of Wisconsin acquired the private library of the late Dr. William Snow Miller, former professor of anatomy and historian of medicine at Wisconsin, containing many historically important books which are not even in the surgeon general's library at Washington. Of the treasures of Dr. Miller which are to form a special part of the Library of the Wisconsin University Medical School, the works of Fallopius and Paracelsus in early (15th century) editions and many others are of pharmaceutico-historical as well as of medical interest.

It conveys an idea of the importance of the books of the general (humanities) library to pharmaceutico-historical research if one realizes the fact that it contains Dioscorides in the Greek, Pliny in the Latin original and in translation, many of the works attributed to Hippocrates and written about him and the annotated and translated texts of the Papyri Ebers, Smith, etc. The entire bibliographic service of the country is made available through the office of the Director of the University Library.

**C. The Library of the State Historical Society of Wisconsin.**—The State Historical Society of Wisconsin, organized in the early part of 1849, i.e., scarcely one year after Wisconsin became a state, is exceptionally well equipped with printed and manuscript colonial records and government documents, state and federal, with United States newspapers, biographical material and reports concerning American travel, e.g., the Jesuit relations.

Within this frame, naturally, material of interest to the development of American pharmacy, the use and the cultivation of medicinal plants, etc. can be expected and has indeed been found and used.

It may be mentioned that the Library of the State Historical Society of Wisconsin owns a copy of the Catalogue of the Library of the British Museum thus making possible the checking as to title, year of publication, etc. of rare books,



preserved in the great English collection, and finally the providing of photostatic reproductions.

**D. Other Libraries in Madison.**—There are furthermore in Madison the Library of the Wisconsin Academy of Sciences, Arts, and Letters, containing a valuable collection of reports and transactions of learned societies, the Legislative Reference Library, the State Law Library and finally the Madison Free Library. All these libraries have proved of occasional value to pharmaceutico-historical research.

*The Pharmaceutico-Historical Collections at Madison*

**A. Collections Preserved Within the School of Pharmacy.** The pharmaceutico-historical collections preserved within the School of Pharmacy of the University of Wisconsin may be divided into three groups.

1. *School Collections.*—Besides the usual collections of chemicals and drugs to be found in most of the Schools or Colleges of Pharmacy, a collection of Ceylon and Johore drugs, especially illustrative of the natural history of Cinchona bark, and a collection of Malay, Philippine and Chinese drugs, are of special interest.

2. *Collections of Dr. Kremers.*

a. *Printed and manuscript material on the History of Pharmacy* with special regard to the history of American pharmacy.

In securing since almost 50 years the available printed material including reprints and clippings from pharmaceutical and other journals, etc. on current and past events as well as on individuals of pharmaceutical interest, and in preserving a sweeping correspondence with practically all outstanding American pharmacists and pharmaceutical scientists and with many representatives of the European pharmaceutical world, Dr. Kremers had brought together a very comprehensive collection.

Many files are filled with notes and material on the development of the individual associations, special meetings, and prominent officers. Others are devoted to the development of American pharmaceutical education and to the legal situation of American pharmacy.

A special collection concerns manufacturing pharmacy and wholesale drug trade. It consists of illustrated volumes, anniversary publications, advertising, brochures, scientific reports,

notes and pamphlets, etc. issued by the firms concerned from about 1900 until the present.

The biographical material brought together is especially comprehensive and unique.

b. *Slides*.—There is a collection of slides, totalling over a 1000 and representing a unique selection of the pictorial material on pharmacy and chemistry available. The use of these slides is facilitated by a card catalogue as well as inventory.

c. *Encyclopedic dictionary*.—A collection of cards containing brief information or references on all possible subjects of pharmaceutical or related interest has been started with the intention of developing a pharmaceutical encyclopedia. The respective files contain at present more than 150,000 cards. Some years ago 50 cards were published in order to convey an idea of the kind of information and arrangement intended. Much other material has been partly edited for future publication.

### 3. *Collections of Dr. Richtmann.*

a. *Collections of literature on drugs* with special reference to those of American origin aimed at effecting an inventory of all data by authors, countries and chronology concerning the drugs, their natural history, contents, uses, cultivation and their role in general history, in custom and in superstition.

A special collection has been devoted to *botanical names*, classified as to personal names, therapeutic properties, geographical and ecological habitats.

A *bibliography of illustrations of medicinal plants*, separated into references to colored and black and white ones respectively, covers the field of plant-iconography.

b. Material concerning the development leading to the modern *binominal nomenclature* in botany previous to, by, and subsequent to Linne.

c. Material concerning the development leading to the modern *chemical symbols* previous to, by, and subsequent to Berzelius.

**B. Collections Preserved Within the Museum of the Wisconsin Historical Society.**—A *Pioneer Wisconsin Drugstore* was installed as a unit in the Museum of the Wisconsin Historical Society in the fall of 1918. Starting in 1897 the stu-

dents and instructional staff of the School of Pharmacy with the cooperation, financial and otherwise, of the Wisconsin Pharmaceutical Association, collected material from all over the state. All of the objects, exhibited in the "store", had been used in Wisconsin pharmacies during the first 50 years of statehood (1848 to 1898).

The arrangement of the material as a unit is largely the work of the Custodian of the Historical Museum, Charles E. Brown.

*Pharmaceutico-Historical Instruction and Work at Madison, Wisconsin*

**A. Pharmaceutico-historical Instruction.**—In the catalogue of the University of Wisconsin for 1897-98 we find two announcements concerning the historical treatment of subjects within the pharmaceutical curriculum. Mr. Fischer announced "history of pharmacopœias and discussions of U. S. Pharmacopœia", a subject taken over by Dr. Richtmann in the academic year 1898-99, and Dr. Meyer promised within his lecture on the economic functions of the state the "historical and critical discussion" of the relations of the state to industry, trade and the professions, "with special reference to pharmacy."

It was in 1902 that on the initiative of Dr. Kremers steps were taken toward the organization of a Historical Section of the American Pharmaceutical Association by the appointment of a committee and it was at about the same time that he started in his home a kind of seminar on the history of pharmacy and chemistry.

This instruction was informal, a gathering of senior and graduate students with the professor serving more as a pathfinder directing the way of search and orientation into this fascinating field of enlightenment than as a teacher. By inviting colleagues of the departments of the Classics and of Medieval history, etc. when the subjects of discussion made the presence and aid of experts in the languages or periods of time concerned desirable, Dr. Kremers met two ends. He enlarged the scope and elevated the level of his lectures and he made the latter recognized and popular on the campus of the University.

In the University Catalogue 1907-/1908 History of Pharmacy as well as History of Chemistry appear for the first

time officially as recognized subjects of instruction both announced by the same teacher—the Director of the Course of Pharmacy. Another announcement of the same man in the same catalogue concerns “pharmacopœias and their revision, with special reference to the U.S.P.”, i.e., a critical survey on the historical development of the official *materia medica* represented in and by the pharmacopœias and on the techniques of their revision.

Lectures on “the development of State Boards of Pharmacy in the United States and their legal functions” and the historical lectures on the relations of the State to Pharmacy already met with in the Catalogue of 1897/98, i.e., ten years before, complete this really memorable display of early historical consciousness within an American School of Pharmacy.

In 1907/1908 History of Pharmacy was taught in the “second semester every other Wednesday.” In 1911/12 the respective instruction, consisting of “lectures and topics” was extended over three semesters, namely the second, the third, and the fourth.

In the University Catalogue for 1922/23 Dr. Richtmann announced for the first time a special lecture on “sources of information of crude vegetable and animal drugs”, since 1930 defined in the catalogue as concerning “the use of the library in locating the literature relating to drugs.” In 1925 Dr. Kremers made his explanatory survey on pharmaceutical journals, textbooks, etc. presented to graduates a special course under the title “Pharmaceutical Literature.” Since 1935 this course has been continued by Dr. Richtmann.

In the course of this development teachers and students advanced from the purely receptive stage of their work to that of research of their own.

#### **B. Pharmaceutico-Historical Work, Done and Planned at Madison.**

a. *Theses on historical subjects.*—The interest and the co-operation of the students in historical information and work has been promoted at the School of Pharmacy of the University of Wisconsin by the fact that many of them were given pharmaceutico-historical topics for their theses. A great number of Bachelor's theses, some Master's theses, and even one Wisconsin University Doctor's thesis deal with historical or bibliographical problems or tasks.

b. *The Badger Pharmacist*.—In 1900 the pharmacy students of the University of Wisconsin published under the title "The Badger Pharmacist" a volume of 292 pages as "a first attempt to bring together all important (historical) information pertaining to pharmacy in one State of the Union." The same title was chosen for a preconventional publication, published by the Wisconsin Pharmaceutical Association in the interest of its "Jubilee Meeting" in March, April, May, June and July, 1930, and devoted exclusively to the history of pharmacy in Wisconsin. Since 1931 this journal has been continued with the aid of the Eta (Wisconsin) Chapter of Rho Chi and occasional grants of the Wisconsin State Board of Pharmacy and Wisconsin pharmaceutical wholesalers and manufacturers.

Abandoning its self-imposed restriction to Wisconsin pharmaceutical history the *Badger Pharmacist* became the first and only periodical within the United States devoted exclusively to the History of Pharmacy, especially of American Pharmacy. The last four issues of the journal, the publication of which was made possible by grants-in-aid from the Hollister Pharmaceutical Library Fund of the State Historical Society of Wisconsin, were devoted to the reproduction with comments of documents pertaining to the Medicinal Supplies within the North American Colonies from 1643 to 1790, namely:

April, 1937: "Receipts to Cure Various Disorders" (1643)

June, 1938: "The Lititz Pharmacopœia" (1778)

February, 1939: "A Drug List of King Philips War" (1676)

December, 1940: "Coste's Compendium Pharmaceuticum" (1780).

It is intended to combine these 4 copies of the *Badger Pharmacist* (together with some additions and corrections as to the Lititz Pharmacopœia) within one volume in order to facilitate the comparative study of the development of American Materia Medica between 1643 and 1780.

c. *The Hollister Pharmaceutical Library Fund*.—As already mentioned the publication of the last and most important issues of the "Badger Pharmacist" has been made possible by grants-in-aid from the "Hollister Pharmaceutical Library Fund of the State Historical Society of Wisconsin."

This fund was established in 1914 under the wills of the late Wisconsin pharmacist Albert Henry Hollister and his wife Kittie E. V. Hollister. Originally \$12,205. it has grown

to more than \$35,000. Concerning the object of the fund or the Society administering it, the late Dr. Joseph Schafer, Superintendent of the State Historical Society of Wisconsin, wrote in 1926:

"The object of the Society is not to duplicate the valuable pharmaceutical collection of the University of Wisconsin, but to do for pharmaceutical Americana what the Society has been doing for Americana at large, and to do it in the same broad spirit."

*The Hollister Pharmaceutical Library Fund, at Madison, administered by one of the leading American Historical Societies, is, up to the present, the only fund within the United States available for and until now devoted exclusively to the purpose of making possible pharmaceutico-historical publications.*

d. *Facsimile reprint of the Pharmacopœia Augustana.*—The remark of Dr. Schafer quoted above is to be found in the preface to the first publication, the costs of which were paid out of the Hollister Fund of the Wisconsin Historical Society. A volume containing a facsimile reprint of the first edition of the *Pharmacopœia Augustana* (1564), edited by Dr. Kremers who also furnished the translation of the articles published by Dr. Theodor Huseman of Goettigen in the *Pharmaceutische Zeitung* in 1892 and used now as an explanatory introduction to the reprint.

What this publication meant to the History of Pharmacy and its students all over the world becomes evident from the fact that of this early and very important pharmacopœia only two original copies are known to exist. In his preface Dr. Schafer designates the reprint as "the first of the series of reproductions," with which "the State Historical Society hopes to impart a new stimulus to pharmaceutical historical research everywhere, making it possible to use photographically true copies of the originals."

e. *Planned publication of a facsimile reprint with comments of the first London Pharmacopœia (1618).*

It was in consequence of the idea of a "series of reproductions" that the Wisconsin State Historical Society in its capacity as administrator of the Hollister Fund engaged in 1940 the writer of this memorandum for the purpose of investigating the real reasons for the hitherto insufficiently explained withdrawal of the first issue of the first London Pharmacopœia and its replacement by another, to comment upon the character



and the contents of both issues, and to edit the planned facsimile reprint with his comments as an introduction.

This investigation was finished within five months, i.e., from April 1 to August 31, 1940. The publication of the volume may be expected in the near future.

f. *The "Kremers-Urdang, History of Pharmacy."* There was until 1940 no systematic historical survey on the development of American pharmacy. It was on the initiative of Dr. Kremers and in consequence of his plans as well as on the basis of a very fortunate mental harmony as to the arrangement of the subject matter that the author of this memorandum started in July 1939 with the preparation of an historical survey mirroring and explaining the growth of American pharmacy and the development, during antiquity and in Europe, upon which it is based.

This work, published in 1940, under the title "Kremers-Urdang, History of Pharmacy", would have been impossible without the abundant material available in Madison. Thus, as stated in the preface to the book, "Madison was the natural birthplace of the history of American pharmacy."

g. *Slides.* It is intended to examine the collection of slides previously mentioned as to their completeness and to add new ones if necessary in order to have a series illustrating every phase of the historical development of pharmacy as completely as possible. For each individual picture a legend will be supplied explaining briefly its significance and referring to sources of further information. These slides will be reproduced on film, and the film, together with the legends concerned, will be placed at the disposal of all interested individuals and institutions especially of teachers, colleges of pharmacy, and pharmaceutical associations at a non-profit price.

h. *Encyclopedic dictionary.* In the last years the work on the encyclopedic dictionary previously mentioned has been done with the assistance of W.P.A. workers. It is being continued with the same cooperation.

*The General Preparedness at Madison for the Conception and Promotion of an American Institute of the History of Pharmacy.*

The position of Wisconsin, its University, and its State Historical Society within the scientific, educational, and, in general, the cultural life of the United States of America does not need any explanation. Everybody who is concerned with

the intellectual American development at large knows that it ranks high.

It was possible only in such an atmosphere that the pharmaceutico-historical spirit radiating from and cultivated in the School of Pharmacy of the University of Wisconsin could find such recognition and assistance.

1. By the *State of Wisconsin* which has granted W.P.A. work.

2. By the *University of Wisconsin* which generously has responded to the demands of the staff members of the school in purchasing pharmaceutico-historical literature and in recognizing the special historical features and subjects within the pharmaceutical curriculum.

3. By the *State Historical Society of Wisconsin* which has cooperated with Wisconsin pharmacy in housing the Pioneer Drugstore, in administering the Hollister Pharmaceutical Library Fund according to the suggestions of Dr. Kremers, and in placing the rooms and other facilities of the Historical Museum at the disposal of Wisconsin Pharmacy for the purpose of historical exhibitions.

Living within the general atmosphere described, the *druggists of the State of Wisconsin*, many of whom are former students of the Wisconsin University School of Pharmacy, probably have been more interested in the history of their profession than the average of their colleagues in other states of the Union.

The proceedings of the Wisconsin Pharmaceutical Association prove that there was scarcely one annual meeting without some historical paper or discussion. The support of the "Badger Pharmacist" by the Association and its cooperation in the building up of the "Pioneer Wisconsin Drugstore" has been mentioned. How consistently this spirit continues to manifest itself becomes evident from the fact that the Wisconsin Pharmaceutical Association actively promotes the foundation of the American Institute of the History of Pharmacy by permitting the Secretary of the Association to add, without remuneration, the duties of the business administration of the new Institute to the comprehensive work already allotted to him.

#### *Conclusion*

It is not the one or the other of the special features, events and publications mentioned above, but the fact of their co-

ordinate and coordinating existence, the impact of their totality that makes Madison the only place within the Americas really ready for the establishment and the maintenance of an Institute of the History of Pharmacy.

However, it is not a "Madison" or a "Wisconsin" Institute. It is an "American" Institute which a few men have conceived and decided upon on January 22, 1941. The results of almost half a century's work, experience and growth are placed at the disposal of American pharmacy. Theoretically, it can take and use them or it can leave and lose them. Practically, there is no alternative of that kind.

American pharmacy has proved to be professionally minded and aware of its cultural importance. Thus, its response to a challenge like this is certain. It cannot be anything else but positive.

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## Right Pharmaceutical Thinking\*

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Several years ago questionnaires were sent to a limited but nevertheless representative number of persons in arbitrarily selected economic and social levels asking for frank and honest expressions of opinion of pharmacies and pharmaceutical practitioners. The replies were reported and discussed before the Iowa Pharmaceutical Association on April 5, 1939, under the title "What other people think of us."† Even though the number of persons so solicited was small, the replies received from laborers, housewives, lawyers, doctors, ministers, bankers, and others were so significantly representative of sound thinking that one wonders why more pharmacists do not feel the pulse of lay and professional persons, make adaptations in their business and professional methods so as to adequately supply the services desired by them, and profit their clients, their profession, and also themselves by so doing. More often than not, the "operations-policy" of a pharmacy is based upon the proprietor's own individualistic ideas of what the physician and the public want

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\*Read before the Fifth District meeting, Fargo, North Dakota, April 28, 1941.

†Published in *North Western Druggist*, August, 1939.

instead of upon facts ascertained by asking them. The pharmacy is a fundamental public health service agency and as such it must be fundamentally operated if it is to survive. Any material departure from or minimizing of such basic function is a step toward over-emphasized commercialism with the inevitable masquerading behind the sign of an honorable profession. Many of those who have succumbed to more enticing remunerative drug store activities and, as a result, have forsaken their profession and forgotten their responsibilities, will admit, first; that an impression prevails among laymen that any merchandise bought in a drug store, hair brush, hot water bottle, candy, toiletries, etc., is for some mysterious reason of better quality than a similar article purchased in some other type of store and, second; they will acknowledge, sometimes shamelessly, that they would dispense with their prescription and drug department were it not for the fact that they wish to take advantage of this impression by trading behind or under the sign "drug store" or "pharmacy." It is as true today as it was in 1865 when Abraham Lincoln said: "It is true that you may fool all of the people some of the time; you can even fool some of the people all the time; but you can't fool all of the people all the time." Pharmacists who are functioning solely as tradespeople had best pull their heads out of the sand, and stop trying to fool both themselves and the public. The public is becoming very wise and observing even if some pharmacists are not, and when once a pharmacist has forfeited the professional confidence of his fellow citizens by unprofessional conduct of his business, he can never regain their respect and esteem. The replies received to the questionnaire, previously referred to, were from an enlightened, unfooled public and, therefore, deserved careful thought, analysis and consideration. There were many expressions of opinion as to what these people would like a pharmacy to be; pharmacists were subjected to "face-reddening" criticism (too large a percentage of which was apparently justified) but, on the other hand, many commendatory things were said about them, too. However, an analysis of and between the lines of the replies invariably led us to this conclusion, *viz.*, in general, Johnnie Q. Public believes most pharmacists are spending precious little time thinking how they can be of greater service professionally to those dependent upon them for such service, but instead,

are indifferently practicing their profession merely as a sideline. One also had a feeling that the public appreciated that the sale of merchandise other than drugs, medicines, and medical supplies was a necessary expedient to keeping the doors open so that a pharmaceutical service could be made readily available whenever an occasion arose, but it deplored the variety and kinds of merchandise stocked and also the prominence given to them with consequent relegation of professional items and service to the relatively unimportant class. I am convinced that the public would support and respond to an effort on the part of a pharmacist to really operate his place of business as a professional establishment in which all matters of personal and public health receive first consideration. In short, the public wants its pharmacist to be a professional man in actions as well as in name and insists that a proper sense of proportion between professional and commercial activities be maintained. I am informed that such views of the public are substantiated by facts gained from surveys to the effect that volume of merchandise sales increases whenever professional services are emphasized but that whenever professional activities are permitted to wane and only the merchandising of articles other than drugs, medicines and medical supplies emphasized, both sales curves show a decline. If this is true, it requires no great amount of business acumen to determine which of these two procedures is the better.

Despite the many failings of practitioners in our field, their virtues have made possible a splendid professional progress that has been truly remarkable and, as far as I know, unequalled by any other professional group. When you feel that pharmacy (or should I say its practice) is going to the "bow-wows", I join with Dr. Robert L. Swain in inviting you to peruse the replies made to a questionnaire covering pharmaceutical conditions in the United States that was sent out by the American Pharmaceutical Association in 1853 and, then, contrast middle 19th century pharmaceutical practice with the pharmaceutical service of today. Not only will it encourage you and inspire you to actively take part in today's renaissance movement for better pharmaceutical practice but it will also make you proud indeed of your profession and of the advances it has made. What are a few of the things that have made possible the quality of present day phar-



maceutical service? I can mention only a few of them. Starting at the very root of things, a number of pharmacists, educators, and laymen joined together in raising the educational requirements for practitioners. To do this required infinite patience and tact because many pharmacists believed they were "getting along all right" and didn't want theorists and college professors disturbing the calm of their shallow but placid pools. However, these sturdy pioneers, intransigent to ideas prevailing at the time, would not be satisfied until pharmaceutical education had been placed upon the high standard that it is today. Nearly all states now have prerequisite educational statutes and colleges are conforming to rigid standards established by the American Council on Pharmaceutical Education. It may be that economic conditions will permit, and public and personal public health requirements will demand a still longer minimum educational period in the near future but that remains to be seen. However, we should not forget that as many or more hours are now devoted to the intensive training of a pharmacist in his specialty, *i.e.*, knowledge of drugs with their preparation and compounding, than are used in the study of any other one particular health science specialty. This is one reason why graduates from accredited colleges of pharmacy enjoy a professional parity with graduates of medicine and dentistry. Graduate pharmaceutical education also is rapidly coming to the fore. During 1939-40, 12 Ph.D., 1 D.Sc. and 30 M.S., degrees with majors in pharmaceutical chemistry, pharmacy or pharmacognosy, were conferred. These men, trained at the graduate level, will, of course, make their contributions to the health sciences. About five or six years ago, an outstanding educator and university president said to me: "Educationally and professionally, pharmacy has been sitting on the doorstep of medicine for too many years. I should like to see medicine wearing a path to your door. By concerted action of your practitioners and educators, I know this can be brought to pass and with profit to medicine, to pharmacy, and to those whom they serve." This having been called to my attention, I have watched carefully and seen the change taking place. Physicians no longer think it beneath their dignity to come to pharmacists and ask for advice and suggestions about medicaments. As pharmacists demonstrate their willingness and show their ability to render this service,



more and more physicians will seek it. The success and rapidity of such a development will depend almost entirely upon the pharmacists being prepared to show that they have been as well trained and are as well informed about their specialty as the physicians are about theirs.

Another very important progressive step has been in the enactment of laws regulating the practice of pharmacy. From the four-year apprenticeship and three-month "cram school" requirements for licensure examination to the Bachelor of Science degree plus one year of internship or practical experience requisite, is indeed a big step toward insuring a better pharmaceutical service. The improvement in the quality of licensing examinations, too, is almost phenomenal. Antiquated classical questions such as "Name the halogens", "Give the formula for Epsom Salt", *etc.*, are nearly obsolescent and in their places one finds questions designed not only to ascertain the factual knowledge of the candidate but also his ability to integrate it. The licensing of pharmacies as well as pharmacists, the minimum equipment regulations, and other strong regulatory measures could also be cited as steps in our professional progress. This year Minnesota has constructively amended the state pharmacy law so that our Board of Pharmacy is authorized to suspend or revoke licenses of practitioners for unprofessional conduct detrimental to the public health and safety.

The number of pharmacists who are thinking about and conducting their business in the interest of public health is rapidly on the increase. Conversely, and speaking figuratively, the number of practitioners who are more interested in increased sales in their "hamburger" departments than they are in their prescription and drugs departments, is decreasing. This change in thinking and functioning is evidenced in many ways, one of which is the interest of practitioners in post-graduation, extension, and correspondence study. To keep up-to-date and professionally fit is necessary to the rendition of what might be termed a "first class, grade A service". Recognition of such an imperative need is becoming so universal that it has even been suggested that all practitioners of the health sciences, medicine, dentistry, and pharmacy, be required by law to give evidence of having done a certain number of hours of post-graduation work every five years in order to renew their licenses to practice. I have been informed that post-graduation

medical education has been subsidized in Minnesota and several other states by the Commonwealth Foundation and by funds given to the State Board of Health by the Bureau of Maternal and Child Welfare to the extent that a number of physicians from each district are selected by the Medical Association to attend these courses every year. These grants and subsidies are for a period of five years, during which time it is assumed that reasonably good coverage will have been made. I am pleased to announce that now pharmacy also has such a far-sighted Santa Claus. Beginning next year, a number of post-graduation scholarships of \$15 each (amount sufficient to cover entire cost of our Pharmaceutical Institute, not including railroad fare, amusements, etc.) will be awarded by the Regents of the University of Minnesota. These scholarships have been made possible by several donors who are interested in keeping practitioners of pharmacy abreast of the times. This is surely a fine beginning in that it presages great developments toward a bright future for our profession.

When the pharmaceutical legislation proposed some fifteen or twenty years ago is studied, it is found that while some of it was self-regulatory in character, other measures had to be classed as "special privilege" or "class" legislation. Pharmaceutically-sponsored public health legislation was almost unknown and in some places there was even open antagonism to such measures. In most instances this opposition came from pharmacists who were thinking more about how often the cash register would ring than about their responsibilities as public servants. How materially has that picture changed. With the exception of the usual number of pecuniary-minded objectors found in all professional groups, individual pharmacists, as well as state and national pharmaceutical groups, have rallied to the support of all sound public health legislation and, not satisfied with that, have initiated and sponsored many commendable and worthwhile health measures. Our legislators no longer suspiciously scrutinize a piece of proposed pharmaceutical legislation for the "joker" or the "bugs." They have finally become convinced that the great majority of pharmacists, like the majority of physicians, dentists, and public health officials are unselfishly desirous of making their contribution to the betterment of health conditions. We, as pharmacists, are far from being a perfect lot, but I am

optimistic enough to believe, with Dr. Coue, that every day in every way we are thinking and acting better and better.

When we look in retrospect at endeavors to improve interprofessional relations among physicians, dentists, and pharmacists, we note that most of the early advances were made by pharmacists. Regardless of whether they were prompted by a desire to increase their prescription business or whether they made the efforts in the belief that their work might eventuate in a better health service to the people, their activities were frequently looked upon suspiciously by members of our sister professions. Here again, the picture has changed. Medical, dental, and public health associations now have active interprofessional relationship committees which are cooperating wholeheartedly with similar committees of pharmacists. Several months ago a county medical society invited the pharmacists of the county as guests to dinner and for lectures and discussions in the evening. Will wonders never cease? Seriously, the physicians and pharmacists both profited from that meeting and are now presenting a more united front than ever before in their fight against their common enemy—disease.

In October, 1925, Pharmacy Week was set aside to commemorate the achievements of pharmaceutical practitioners of the past and to acquaint the general public with the many ways in which pharmacists of today are helping to make the world a healthier and, therefore, a safer and happier place in which to live. We had been hiding our light under a bushel for too many years but finally decided to educate the people on the matter of pharmaceutical service. As a result, we have a better-informed but nevertheless a still somewhat skeptical public. After a Pharmacy Week radio address several years ago, a layman said to me: "Can it be possible that my druggist is doing all that you said he was for me and my family? I am glad you reminded me of these things because I had come to think of Mr. Smith as the proprietor of a variety store and had nearly forgotten what an important person he is in my community." It was then my duty to call his attention to the fact that in my talk I had called attention to those many services that most pharmacists are qualified by training and experience to give but that I had not stated that all pharmacists practiced their profession as they were capable of doing. I believe he got my point because his parting remark

was to the effect that now that he knew what service he could get, he intended to "look around until he got it". Like most people, pharmacists indulge in a lot of wishful thinking but seldom do they give their fond wishes a chance to come true by furthering their realization with deeds and actions. We are doing a pretty good job of educating the public and the members of our associated professions as to our importance in the entire "better health program" but I have often wondered if we shouldn't take a little time out every day to educate ourselves and also remind ourselves of our responsibilities. If I had space for only one sign in my pharmacy, I would place it on the inside of the prescription department and it would be addressed, *not* to the physician or my customers, but to *me* and my fellow-workers. It would read something like this: "What can *you* do *today* to give a better professional service to those dependent upon you than you did *yesterday*?" "Right pharmaceutical thinking" would be required to find the answers and if these were put into practice, strong, sound material would then be available for writing a very pleasant sequel to the somewhat depressing story—"What other people think of us."

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## There is Need for Broader and More Effective Cooperation Among the Health-Service Professions<sup>\*</sup>

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That the maintenance of a state of good health is an essential factor in making for success cannot be gainsaid. It is

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<sup>\*</sup>This address was delivered before the graduating classes of the Health Unit of the University of Tennessee, June 9, 1941 and sent to this Journal for publication by Dean Robert L. Crowe. This was the first time that a pharmacy man had made a commencement address at this University. The address was commended locally because the subject matter pertained to all the professions represented in the class. Usually such addresses are given by medical men and directed solely to the graduates in medicine. It is reported that plans are being made to have a pharmacy man give the address every third commencement. Again there is evidence that pharmacy marches on.—Ed.

attested to by the written words of such eminent men of affairs in their times as Herbert Spencer and Gladstone. Herbert Spencer in his essay on man makes use of the following statement which he attributes to an unnamed writer: "*The first requisite to success is to be a good animal,*" and then he adds "*to be a nation of good animals is the first condition to national prosperity.*" Gladstone put it in a little different way, but the meaning is the same. He said: "*In the health of the public lies the wealth of the nation.*" Certainly, without a sound body, man is handicapped, not only in the achievement of success in his calling, but also in the attainment of a full measure of happiness and comfort in living. The condition of our bodies is, therefore, of great concern to all of us at all times. It is of paramount importance to us at this time, when the democracies of the world are fighting for their very existence against the armed might of the totalitarian states, and when superior physical and mental fitness may prove to be the factor which will decide the outcome.

Medicine, dentistry, pharmacy and nursing are the health-service professions to which has been assigned the task of keeping our bodies in healthy condition and they have accepted this assignment as their chief responsibility. It would, therefore, seem that every means which offered possibilities for increased efficiency in meeting this responsibility would be immediately seized upon by them. Unfortunately, this has not been done. A fairly extensive acquaintance with the aims and accomplishments of all of these groups, gained through observation and personal contacts over a period of thirty odd years, compels me to assert that the one means, which in my opinion, offers the greatest possibilities for increased efficiency in the services rendered by these groups, has not been made use of in this country to any marked extent. In fact, until quite recently, it has been almost completely neglected. I refer to cooperation—cooperation, not only among these groups and the research workers in the sciences which are basic to these professions, namely, chemistry, physics, biology, bacteriology, physiology, pharmacology, et cetera; but also to cooperation among the practitioners of these professions in the prompt and efficient application in every day practice of the discoveries yielded by research.

We speak glibly of the wonderful strides which we have made in this country in the control and eradication of disease.



We say that cholera and the plague have been banished from our shores, that tuberculosis is now under control, that diphtheria is no longer to be greatly dreaded, that typhoid fever has been practically eliminated, that tetanus can be prevented, that malaria and yellow fever are no longer the dreaded scourges of the South that they were thirty-five years ago; but we do not add, as we should, if we were to tell the whole truth, that little credit is due us for these achievements because the fundamental knowledge used in combating these diseases was made available by foreign laboratories, particularly German laboratories, in which the advantages to be gained by cooperative effort in research have long been recognized.

What is perhaps even less to our credit is that we have not profited more fully from the example set for us by these foreign laboratories in attacking the many and perplexing problems which still remain unsolved. I refer particularly to such disorders as diseases of the heart, cancer and other malignant tumors, cerebral hemorrhage, nephritis, influenza and pneumonia, tuberculosis, diabetes, cirrhosis of the liver, et cetera. All of these diseases continue to take a heavy toll in lives annually and in some cases this toll is increasing at an alarming rate. For instance, the death rate in diseases of the heart has increased, in round numbers, from 159 per 100,000 in 1920 to 276 per 100,000 in 1939; the death rate in cancer and malignant tumors from 83 per 100,000 in 1920 to 118 per 100,000 in 1939; the death rate in cerebral hemorrhage from 82 per 100,000 in 1920 to 88 per 100,000 in 1939; and the death rate in diabetes from 16 per 100,000 in 1920 to 26 per 100,000 in 1939.

Dr. Reid Hunt, Professor of Pharmacology at Harvard University Medical School, in a plea for the establishment of a national institute of health, which would provide the organization and facilities to make possible the kind of cooperation needed to attack these problems successfully, stated at a hearing before a congressional committee on May 25th, 1928: "*Never in the whole history of the world, I think, have the efforts to improve health conditions lagged so far behind the advances made in the other sciences.*"

As a matter of fact, slowness in the application of fundamental knowledge to health problems is perhaps the greatest of the disadvantages resulting from the lack of cooperation.



As evidence in support of this contention, I cite the following examples of failure to make prompt use of important discoveries in just one of the basic sciences, namely chemistry.

The preparation of ether was described fully in 1545 and its manufacture on a commercial scale was begun in 1730, yet it was not until March 30, 1842, three centuries after its discovery, that it was first used as an anaesthetic. On that date, Dr. Long of Jefferson, Jackson County, Georgia, anaesthetized James Venable with it and removed a malignant tumor from his neck.

The lapse of time between discovery and application was also incredibly long in the case of two of the newer general anaesthetics which have come into use within the past fifteen years, namely, ethylene and acetylene. The former is now used quite extensively in this country and the latter is being used in Europe. Both of these chemicals were well known to chemists for over a hundred years before anybody got around to testing them out to see if they could be used as medicinal agents.

Amyl nitrite was discovered by a French chemist in 1844, but it was not until 1867 that Dr. Brunton discovered its value in relieving the agonizing pain of angina pectoris.

Acetanilid and its derivatives are the basis of nearly all of the commonly used remedies for headache. They were prepared by the chemist at least fifty years before it was discovered that they would relieve headache.

The chemist first prepared carbon tetrachloride, now widely used for cleaning clothes and as a fire extinguisher, more than one hundred years ago, but it was not until about fifteen years ago that one of the research workers in the Bureau of Animal Industry of the United States Department of Agriculture discovered that it was an efficient remedy for worms in animals. A short time later, it was found to be equally effective in the treatment of hookworm disease in man.

Ehrlich's ideas with respect to the remedy which he eventually perfected for the cure of syphilis were conceived by him when he was a young man in his twenties, but he had to wait for thirty years to obtain the cooperation of the chemist before he could put them to the test.

Sulfanilamide was discovered by Gilmo in 1908, but it was not until after 1935, when Domagk demonstrated its effective-

ness against a strain of haemolytic streptococci, that its value as a chemotherapeutic agent was recognized.

Examples of this kind, in which delay in the application of discovery was due primarily to the chemist working independently of the pharmaceutical manufacturer, the pharmacologist and the physician instead of with them, could be multiplied many times. The same could be done for the other basic sciences; but that would only bore you; and besides, I desire to call attention at this point by way of contrast to some of the excellent results obtained in this country through cooperation in research where this method of approach to the solution of a problem has been applied. I have already referred in a general way to the benefits derived from this method of approach in foreign countries.

For instance, take the discovery of insulin and its therapeutic properties. Both discoveries occurred almost simultaneously and were the result of the cooperative efforts of a small group of men headed by Dr. Banting and representing chemistry, physiology and medicine.

Another case in point is the successful work of the late Dr. Howland of Johns Hopkins University on the cure of rickets. Its success was due in large measure to the active participation of chemist and physician under a single leadership.

The chemist and the physician also cooperated to the benefit of suffering humanity in the preparation of the ethyl esters of the acids of chaulmoogra oil and in their application to the treatment and oftentimes cure of leprosy.

Still another example is to be found in the discovery of the cause and prevention of mottled enamel, a dental lesion endemic in certain localities. Dentists working in conjunction with industrialists found that this condition of the enamel was caused by the presence of excessive amounts of fluorides in drinking water. Now the prevention of mottled enamel is largely a matter of water-works engineering and public sanitation under the guidance of the dental profession.

That there has been undue delay in, and oftentimes complete failure to apply the fruits of discovery in the basic sciences of the health service professions, I am sure you will all agree. That these benefits might have been brought to the public more promptly had there been proper cooperation between the members of the health service professions and

the research workers in the basic sciences, would seem to be evident from the excellent results obtained by cooperation in the several examples cited. Therefore, I contend that, what is most needed at this time to speed up research and the application of its fruits, is broader and more effective cooperation between the groups constituting the health service professions and those representing research workers in the basic sciences.

Dr. Bayliss, the renowned British physiologist, says in his *Introduction to General Physiology* (1919): "*As physiologists, our task is to refer, as far as we can, all phenomena of life to the laws of physics and chemistry.*" If this statement be accepted as a truism, then there is no undertaking, in my opinion, which holds forth greater promise of positive and far-reaching results in every branch of medicine than a united attack upon its problems by the members of the health-service professions working in cooperation with the physicist, the chemist, the physiologist, the pharmacologist, the bacteriologist and the experts in the other basic sciences.

But, cooperation as it applies to the health-service professions, if it is to be made of greatest benefit to mankind, must be continuous and intergroupal as well as broad in its scope. In other words, it must not cease with the effort in which the research worker in the basic sciences plays a leading role, but must be continued among the health groups, themselves, in the every day practice of their respective professions. At present, no two of these groups of practitioners are working together as closely as they can or should, and there is little, if any, real cooperation among the groups as a whole.

Certain present day conditions in the practice of medicine and pharmacy indicate that these two large and important groups of practitioners are not cooperating as effectively as they should in their daily practice. This has given rise to several evils, all of which are detrimental to the best interests of the public. Much too frequently, in the past, for example, pharmacists have indulged in "*counter prescribing*" and physicians in "*office dispensing.*" Both of these practices are inimical to the public health and welfare, and could be abolished promptly and in their entirety, if each of these two groups of practitioners would recognize the preeminence of the other in its particular field of service and would adhere strictly to its code of ethics.

Again, there is evidence of a lack of proper cooperation among physicians and pharmacists in the dissemination of health information to the public. For example, organized pharmacy was not invited until about a year ago to take part in the program of the American Social Hygiene Association for the eradication and control of venereal diseases, even though it was well known from the beginning that those who contract these diseases usually approach the pharmacist first for information and advice on their treatment. As a result, satisfactory progress was not made in the campaign fostered by this Association and affiliated groups until after nearly five years had elapsed.

The control of Rocky Mountain fever is another of the many instances in which it would appear that the pharmacists' services as disseminators of public health information could be used to advantage. This disease, which was originally confined to the vicinity of the Great Divide, is now reported in thirty-seven states. There is no known drug of value in its treatment, and control, therefore, lies in educating the public with regard to its prevention.

In a report of a functional study made under the direction of Dr. W. W. Charters, then Dean of the Graduate School of the University of Pittsburgh, and published in 1927, there appear the following statements:

*"The pharmacists are more strategically situated than any other group of individuals to give personal advice upon matters of public health on which they are informed. The information is given free of charge, and can be obtained within easy walking distance of the home."*

*"A well informed pharmacist is the best single individual to disseminate information about public health."*

If these statements represent the considered opinion of an expert investigator, who has made a study of the services which pharmacists are prepared to render, why should physicians hesitate to take advantage of this gratuitous service which could and should be made available to the public? This applies with equal force to dentists.

It is reported that 72 per cent of our population are not receiving dental care primarily because of ignorance. If this be true, the remedy would seem to be widespread and continuous education of the public through the dissemination of information on the benefits to be derived from professional

care of the teeth. Why has the cooperation of the pharmacist not been solicited in disseminating this information?

There is also discernible a lack of clear understanding among physicians and dentists. Dentists, I am told, feel that they are not called in consultation by physicians as frequently as they should be in cases of systemic diseases aggravated or caused by dental lesions. Physicians, on the other hand, feel that some dentists yield too frequently to the temptation to prescribe treatment for systemic diseases when called upon for dental service. Certainly, failure of these groups of practitioners to cooperate in the treatment of conditions of this kind cannot result in benefit to the public.

I shall purposely refrain from referring to any of the shortcomings of the nurses in their relation with the other health-service professions for fear that my remarks may be misinterpreted and because this group seems to be so willing to give service wherever and whenever it is needed. Just recently, I read a newspaper report of a commencement address delivered before a class of graduating nurses, in which the speaker referred to nursing as a "*high and holy mission*." Immediately, there came to my mind Florence Nightingale and her work, and I said to myself: As envisioned by that most worthy person, nursing is indeed a high and holy mission, and, as such, the very foundation of its service is built upon cooperation.

If the conditions which I have pointed out indicate that there is need for broader and more effective cooperation among some of the groups constituting the health-service professions, there are other conditions, equally as striking, which can be cited to show that there is even greater need for cooperation among the groups as a whole.

Take for example, the current discussions regarding the "*high cost of medical care*" and the suggestions which have been made for state management of the health services as a means of reducing these costs. As I view it, these discussions and suggestions are indicative of a lack of proper cooperation among the professions comprising these services and, if disregarded, may result in the abolishment of private practice, at least in greater part. Effective cooperation of the health-service professions, on the other hand, in keeping with their avowed humanitarian purposes and in which existing economic



inequalities are recognized, would seem to offer a practical solution to the problem.

A still more striking example of lack of cooperation of these groups as a whole is to be found in the field of public health—the more striking, because it is this field which offers the greatest opportunity for cooperative effort in rendering public service. Up until the latter part of the last century, physicians were in complete control of public health work and its administration in this country. Our boards of health, national, state and local, were composed entirely of physicians, and there was no inclination on the part of the latter to include representatives of the other health-service professions in their councils, even in the face of the marked advances, educationally and otherwise, made by these professions. Fortunately, for the welfare of the nation, this attitude has changed.

As far back as 1883, Dr. M. G. Parker, representing Massachusetts said in closing a report on the progress of state medicine: *"I can do no better than to report to the chairman of the present board the advice given last year by my worthy predecessor, Professor Harry I. Bowditch, of Boston, when he said: 'Again, I would suggest that all state boards of health have physicians as secretaries and chairman, and the majority should be physicians; and, finally, I deem it all important to have a lawyer, a man of business and a civil engineer upon every board'."*

Today, while we perhaps recognize more fully than ever before the true significance of the medical profession to public health service, we also recognize that the field is extremely broad and complicated, and that a proper consideration of health problems requires not only the participation of the physician but the dentist, the pharmacist and other professional groups.

So generally accepted is this view now, that not only are dentists and pharmacists being appointed to membership on our boards of health, but, in many sections of the country, we find the health-service professions joining together in one group, the purpose being to maintain public health administration on a proper level and to provide guidance and leadership so essential for the proper understanding and development of public health programs.

In Indiana, for example, there has been formed the Inter-



Professional Health Council, which comprises the professions of medicine, dentistry, pharmacy, nursing and the deans of the colleges of medicine, dentistry and pharmacy, together with the state department of health. In other sections of the country, similar organizations are being effected, which I am happy to say, augurs well for the future of cooperation in this field.

The practice of medicine, as I view it, is an art which makes use of all of the sciences and in the broad sense comprehends all branches of health service. This implies that there must be a division of labor, because no single human being can become proficient in all phases of the practice. If the practitioners who constitute the health-service professions will but recognize this conception of their status, I am certain that most of the obstacles now standing in the way of more effective cooperation will disappear.

I have brought this plea for broader and more effective cooperation among the health-service groups before you at this time, because you, who are the students of today, will become the practitioners of tomorrow, and it is to you we must look for the solution of the many and difficult problems which still confront us. I shall be disappointed if it has not stirred some measure of favorable response within you. But, even if I may not have succeeded in convincing you of its urgency at the moment, I, nevertheless, hope that, ultimately, it will have a salutary influence on your practice and that life in the future will mean much to you, that it will mean as much as it does to that well known Irish playwright and critic, George Bernard Shaw, who said:

*"Life is no brief candle to me. It is a sort of splendid torch which I got hold of for the moment, and I want to make it burn as brightly as possible before handing it on to future generations."*

## The Genoa Druggist Code of 1407\*

ROBERT L. REYNOLDS

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In this day of tentative codes and regulations of enterprises, it is often informative to look back at the similar developments in our own European-American history. Specialists in medieval history have long studied the charters, by-laws, and records of the medieval guilds, but the average layman in America has little access to the original sources or even to the scholarly monographs upon such subjects. It is with that in mind that the following is translated into English.

The druggists or *SPECIARII* had had an important place in the business life of the Italian city of Genoa for at least 250 years before the date of the surviving Code set up to govern their profession. The records of the city contain hundreds of references to the business affairs of such men, such as itemizations of materials purchased by them on their notes of 10-30-60-90 days, inventories of their stocks made by executors after their decease, and so forth, away back into the eleven hundreds. But no scholar has made a detailed study of those records; such a study would take years of work.

The druggists of the town, along with the other merchants and manufacturers had had common regulations since at least the twelve hundreds, but for generations they had more or less let the system develop piecemeal, without any central collection and formalizing of the whole body of laws. In 1403, 1404, and for two years more, a commission of the city government, with representatives of the interested professions, worked to pull the whole system into shape. In 1407 they put through the completed revised code set-up for the whole

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\*Dr. Reynolds made this translation to be read at the April 2, 1941 meeting of the American Institute of the History of Pharmacy at Madison, Wisconsin. The idealism expressed by the code if followed today, would certainly improve the standards of modern practice. It would be a worth while spiritual experience to meditate frequently upon the ethical standards of our professional forefathers through the centuries. We are not only grateful to Dr. Reynolds for the translation, but also for his illuminating comments upon the code. We trust he will bring us frequent messages from that medieval field that is locked against us because of our ignorance and our limitations of language, but in which he lives and is at home.—Ed.

city. The section on the Druggists, given below, certainly represents much older rules and regulations for the most part, but the earlier codes, being superseded in 1407, were thrown away, so we cannot tell just what they contained.

The translation is slightly modernized. For example, the word *printing* is used, although movable block printing was not invented until more than a generation later. But already they did *stamping* with blocks of wood or with iron forms, just as we should today.

## THE DRUGGISTS OF GENOA AND THEIR CODE OF 1407

(*Historiæ Patriæ Monumenta*, vol. XVIII, column 674 ff.)

We fix and ordain that no outsider may take over, conduct or hold a drugstore (or house or warehouse for a drug business) unless he has been licensed by the Master Druggists.

Nor shall any druggist break the rules of the profession under penalty.

No one save a licensed druggist may sell at retail syrups, elixirs, pills and other druggist's preparations. Except that merchants from overseas may sell small consignments of druggists' materials.

Druggists are expected to keep their shops open during business hours. However, shops must be closed Sundays, Feasts of the Apostles and San Lorenzo's day. Save, however, that on such holy days they shall keep a window open at one table of only two palms' size.

No quantity of arsenic or poisons may be sold, given away, allowed to be used or transferred except by a Master Druggist or his licensed employee who may be in charge. A druggist's son of over twenty years' age, trained in the profession, may suffice in such a case.

Since in the Druggists' Profession no personal advantages or prerogatives may be permitted, but only that whoever is best and produces the best goods should be esteemed, and so that each may have incentive to improve and grow steadily from good to better: We fix and ordain that no Druggist shall dare or presume to place or print or cause to be placed or printed the label of another Druggist on any bottle or pill-box. Rather, every Druggist having or wishing to have a trade-

mark which he might make, affix or print, or have made, affixed or impressed on bottles and pill-boxes of preparations and other goods, may have such a trade-mark made or placed or printed, but it must be different from every other Druggist's mark.

No Druggist may fill the bottle or pill-box bearing the label of any other Druggist. If a purchaser comes with a bottle or box bearing another Druggist's label, such label must be taken off or scratched over and the second Druggist must affix his own label or trade-mark.

All materials from which remedies are compounded must be kept in the windows of the shop, in view of the public, continuously for eight days after the compound has been mixed.

No Turk or Tartar slave may be taught how to be a Druggist. Other slaves may be taught the profession, but they may not be left in charge of shops even if they have been liberated, nor may they hold gild offices.

We fix and ordain,—to prevent any Druggist from having temptation or reason for sinning, and to keep them from raising prices higher than is becoming,—that no Druggist may keep store in partnership or agreement with any Medico. All Druggists must swear an oath before the Masters of the Craft, each year, to observe completely and precisely the letter and spirit of this prohibition.

No one may peddle drugs, pills, or elixirs through the streets or from door to door, unless specially licensed. Sailors, mariners, and merchants coming from overseas may, however, seek purchasers for small consignments of druggist's wares.

No Druggist or Agent may receive, purchase, take, or accept as gift any merchandise from a city inspector or agent of such inspector or city warehouse supervisor.

## The Significance of the Centennial Celebration of the School of Pharmacy of the University of Maryland\*

ANDREW G. DUMEZ  
University of Maryland

Yesterday, we assembled to inaugurate the program of activities for the celebration of the hundredth anniversary of our School of Pharmacy and to receive felicitations from our state and city officials and the representatives of the organizations and institutions, who have come here to help us make this a memorable occasion.

Today, we are convened to do homage to the founders of the school and to those who served as administrative officers and members of the faculty during the one hundred years which have intervened since its founding and today, and who had the foresight and wisdom to guide its development in the direction of increased efficiency and usefulness in order that it might rank among the leading educational institutions of its kind in this country as it now does.

If a centennial celebration has any particular significance, and I believe it does, it seems to me to lie in the fact that it marks a time for rejoicing over past achievements, for serious consideration of existing shortcomings and for arousing inspiration for future undertakings. If this be a proper conception of the significance of a centennial celebration, then the University of Maryland, its alumni and friends have justification for rejoicing, for introspection and for contemplation of the future.

From the very beginning, the school has been fortunate in having had among its administrative officers and faculty members an unusually large number, who were pioneers in effort as well as in thought. The effect has been that the school has kept pace with, and more often has been in the

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\*For the centenary there was assembled a group of distinguished men representing every phase of pharmaceutical endeavor. At the request of the editor and through the courtesy of Dean DuMez, the reader of this *Journal* will be privileged to enjoy the centennial program through the months to come.—Ed.

vanguard, of movements for the advancement of pharmaceutical education; that it has fostered pharmaceutical research from an early period of its existence; and that it has instituted or supported most of the laws now on our statute books for the control of the practice of pharmacy and for the manufacture, sale and distribution of drugs and medicines within the state.

As evidence of leadership in the field of pharmaceutical education, the following accomplishments are cited. The school was the first to establish a separate professorship in the theory and practice of pharmacy. This professorship was established on April 24, 1844. It was the first school of pharmacy to make obligatory a course in analytical chemistry. A course of this kind was made a part of the curriculum for the first time on March 23, 1872. It was one of the first schools of pharmacy to establish a separate course in prescription compounding, consisting of both, lectures and laboratory work. It was the first institution of any kind in this country to establish a laboratory for instruction in bioassaying. Instruction in this laboratory was offered for the first time in 1930 and was made possible through the generosity of the late Captain Isaac E. Emerson.

It was in response to the call of the Maryland College of Pharmacy that the first convention of representatives of the colleges of pharmacy of this country was held in Baltimore on September 13, 1870, for the purpose of formulating uniform standards for the graduation of pharmacy students. Again in 1900, it was Dr. Henry P. Hynson, Secretary of the Maryland College of Pharmacy, who issued the call for the conference of pharmaceutical educators which finally resulted in the formation of the American Association of Colleges of Pharmacy, an organization comparable to the American Association of Medical Colleges in its particular sphere of influence. More recently, two members of the faculty of the school, played a leading part in the formation of the American Council on Pharmaceutical Education, an agency created in 1932 for the accreditation of colleges of pharmacy.

Time does not permit of the mention of more than a very few of the many notable contributions which the school has made to pharmaceutical research. For example, the studies on percolation reported by Professor Israel Graham in 1885



and the work of William Silver Thompson on the manufacture and analysis of various types of pharmaceutical preparations stand out as being of pioneer character and exceptionally meritorious for their times. The work done by Professor Charles E. Caspari, Jr., in conjunction with Dr. Alfred Dohme in 1896, on the adaptation of volumetric methods of analysis to the assay of official alkaloidal drugs is still considered a classic. In more recent times, work of exceptionally meritorious character was done by Dr. John C. Krantz, Jr., on the theory of emulsions and by Dr. Marvin R. Thompson in the isolation of ergonovine, one of the important constituents of ergot.

In the promotion of legislation designed to safeguard the health of our citizens, the school has likewise not been inactive. Subsequent to 1841 and prior to 1902, the year in which the first state-wide pharmacy practice law was passed, all pharmaceutical laws enacted by the legislature of this State were initiated and fostered by the school of pharmacy. In 1904, the school ceased to be a private institution. Since then, its influence on legislation has been exercised through its alumni.

To say that the school has at all times in the past measured up to the ideals and purposes of its founders and that it has no deficiencies today, would be giving expression to an untruth and would be mere braggadocio. It is believed, however, that it can be truthfully said, its shortcomings, both past and present, have been due mainly to the lack of adequate funds with which to operate and not to failure to recognize deficiencies or the lack of the desire to correct them.

Our present deficiencies, for instance, are the result of the lack of the space, equipment and staff needed to give some of the special courses of instruction believed to be necessary to keep pace with the many new discoveries made in the basic sciences and the rapid advances made in the practice of medicine in the last century. To correct these deficiencies and to meet new requirements for instruction as they arise, we must look to the future and to the assistance of our alumni and friends. It is occasions of this kind which inspire us with the courage to carry on, even though it be under adverse conditions at times.

To plan for the future is always a pleasant occupation,

although it is frequently followed by heartaches when plans do not materialize.

In the beginning, the main objective of the school was to supplement the instruction received by apprentices in pharmacy in the work done in drug stores. For more than sixty years, this continued to be its chief objective; but with the beginning of the century, it began to be evident that pharmaceutical education had to undergo fundamental changes to meet new conditions arising from the abandonment of the outmoded apprenticeship system and to keep in step with the progress being made in education in the other health-service professions. Accordingly, the College lengthened its course from one of two years to one of three years in 1925 and from one of three years to one of four years in 1932, and added to the curriculum courses in the cultural subjects, mathematics, biological sciences, public health, et cetera. More recently, it became evident that there was need to provide specialized education for those who intend to enter the fields of pharmaceutical manufacturing, research and teaching. Special courses intended to make for proficiency in these fields were, therefore, added to the curriculum in 1930, when the present building was occupied and when facilities for doing work of this kind were first made available to the school.

The transformation of crude vegetable, animal and mineral substances into forms suitable for use as drugs and medicines has always been and still is one of the chief functions of the pharmacist. Fifty years ago, this was done in the average drug store, but the changes which have taken place in the nature of our materia medica make it no longer feasible for pharmacists to undertake this work, except on a very limited scale. The greater number of the widely used drugs and medicines are now prepared in large pharmaceutical manufacturing plants where the necessary research and control departments can be maintained. Since this is the present trend, there can be no doubt of the growth of these plants in the future. It, therefore, seems to me that our undertakings for the immediate future are clearly defined: We must expand our facilities and staff to provide for more instruction in the sciences and specialties fundamental to pharmaceutical research and control work and to the education of teachers in pharmacy. With the continued support of our

alumni and friends I am sure that all of these objectives will be reached.

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## The Early Days of American Pharmacy\*

GEORGE URDANG  
University of Wisconsin

As all of us know, it was in 1492 that Columbus discovered America. It was not, however, until the early 17th century that this new world, and especially the northern part of it, was definitely recognized as a new homestead of the white race and as a country not to be exploited but to be cultivated, not to be conquered by arms and violence but by work and patience.

It was in 1608 that John Smith wrote to the London corporation which owned the enormous territory at that time called "*Virginia*," as follows: "*Here was a land, unlike Mexico and Peru, that would yield only to toil, that held no spoil for the predatory classes of Europe.*"

In this land the formative power of the given circumstances, forever creating new needs and opportunities, could not so easily be overlooked as on the old continent where the needs remained stable and where the opportunities had become sterile.

What were the general circumstances in the early days of American pharmacy and what kind of pharmaceutical service did they require? The answer is that these circumstances were primitive and, therefore, even the most primitive kind of pharmaceutical service was appreciated because it was or was considered better than no service at all.

The first authentic report on pharmaceutical service rendered on North American soil by a white man and on the basis of European knowledge concerns the first Governor of Massachusetts Colony, John Winthrop, Senior, (1587-1649) to whom in compliance with his request the London physician,

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\*This paper was read at the Centennial Celebration of the School of Pharmacy of the University of Maryland on June 5, 1941. Dr. George Urdang, formerly Director of the Society of the History of Pharmacy, Berlin, is now Director of the American Institute of the History of Pharmacy.—Ed.

Edward Stafford, in 1643, sent a list of "*receipts to cure various disorders.*" These receipts were mostly of a household character and taken from John Gerard's herbal.

Winthrop was a learned man. That could not, or only to a very limited degree, be said of most of the American practitioners who executed—and that sometimes in more than one sense—medicine and pharmacy, between 1650 and 1750, as one and the same profession. The continental European separation of medicine and pharmacy, never absolute in England and the Anglo-Saxon countries, disappeared totally on American soil. Even if the immigrants coming over from England were educated as apothecaries, in America they were asked to render medical services as well and some times this service was primary.

Mostly, however, during the period mentioned, pharmacy was in the hands of surgeons or physicians whose income from their stores often exceeded that from their medical practice. We know of very lucrative drug stores conducted by physicians in the 17th, 18th, and 19th centuries. When the outstanding New England physician, Silvester Gardiner (1708-1786), escaped to England during the Revolutionary War his stock of drugs confiscated by the revolutionary authorities filled over 20 wagons. The first store of this kind, the existence of which we know authentically (1663-1665), was that of the surgeon Gysbert van Imbroch in Wildwycks (now Kingston) in New Netherlands.

It is significant that before 1700 there were plenty of people who were, or called themselves, physicians and only a very few who assumed to be apothecaries in the exclusive meaning of the term. Oliver Wendell Holmes reports that he found among the settlers who came to Massachusetts before 1692 the names of 134 medical practitioners. "*Of these,*" Holmes says, "*twelve and probably many more, practiced surgery; three were barber-surgeons . . . six or seven, probably a larger number, were ministers as well as physicians . . . One was not only doctor, but also schoolmaster and poet. One was a butcher but called himself a surgeon in his will, a union of callings which suggests an obvious pleasantry.*"

In 1721, the physician, Dr. William Douglas, wrote that there were 14 apothecary shops in Boston without telling how many of them were conducted by medical men. However, in

the same year Thomas Aston, offering in the Boston Gazette "all sorts of drugs and medicines," a variety of products, tea, coffee, etc., called himself "apothecary and grocer," and in 1733 the same paper published an advertisement by "William Rand, apothecary at the Unicorn." In 1729 Christopher Marshall, the English born ancestor and founder of a Philadelphian apothecary dynasty, established himself. His biographer calls him an apothecary, druggist, botanist and chemist. No mention has been made of any medical activity of Marshall. The first official American reference we know of concerning the "apothecary making up the prescriptions of another," i.e., of the filling of prescriptions of medical practitioners by pharmaceutical professionals, is contained in a Virginia Act of 1736. The word "druggist" besides "apothecary" appears in a South Carolina Act of 1751. According to Cowen, by "apothecary" was meant the pharmaceutical retailer and by "druggist" the importer and wholesaler.

It was a physician, John Morgan, who started his career as an apothecary and who was the first to advocate publicly the separation of American medicine and pharmacy. In his "Discourse Upon The Institution of Medical Schools in America," he said among other statements:

*We must regret that the very different employment of physician, surgeon, and apothecary should be promiscuously followed by any one man: They certainly require different talents. . . The apothecary is to prepare and compound medicines as the physician shall direct."*

It was due to the general circumstances that the separation of American medicine and pharmacy could not be realized in the 18th century. The number of professional pharmacists was too small, the need of many physicians in the thinly settled country for an additional income by the sale of drugs was too coercive. This situation repeated itself again and again when new territories were opened for the settlement of the white man and the covered wagons rolled to the West.

*Early Days of American Pharmacy!—When did they end?*

In a report answering a questionnaire of the young American Pharmaceutical Association we read that in the year 1851 the State of Maryland contained about 139 apothecary shops of all grades, about 100 of them in the city of Baltimore, but only 12 estimated as being owned by real apothecaries. In Delaware, about 1860, some druggists of Wilmington sent

out wagons filled with all sorts of domestic medicines to supply country general stores in order to meet urgent local needs. When as late as 1881 the first West Virginia Pharmacy Act was issued, only two of the 326 pharmacists registered during the next two years were college graduates.

Let me conclude in stating that we still are living in "*the early days of American pharmacy.*" As great and wonderful as the progress is that has been made, we are still in the beginning.

American pharmacy is as young, as elastic, as eager and capable to rise to ever higher levels as the country which it has to serve. After their early days of struggle, adaptation and amalgamation, *Theirs Is The Future!*

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## Prescription Files and the Teaching of Dispensing Pharmacy

ELMER M. PLEIN

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We often hear questions concerning the prescription files of drug stores. How many prescriptions in an average file call for solutions, capsules, or ointments? Does the average pharmacist have to compound many prescriptions or are most of the prescribed substances ready-made? Is there a definite trend in prescribing from the compounded type of prescription to that which is ready-made? While these are common questions, very little work has been done in an attempt to answer them.

Some interesting facts are revealed by a study of the prescriptions filled by a drug store in a small western city. During a two-year period (July 1, 1938 to July 1, 1940) this store filled 2477 prescriptions. During the first half of the period, 1242 were filled (1027 of these were originals and 215 were refills). During the second year the total was 1235, of which 1022 were originals and 213 were refills. These figures show a daily average of 3 to 4 and a monthly average of about 100.



The following table gives the types of prescriptions and the number of each type.

	First Year		Second Year		Total
	Ready	Compounded	Ready	Compounded	
Solutions (Oral use)	85	229	100	192	606
Tablets	309	0	285	0	594
Capsules	152	41	191	70	454
Nose Drops	82	28	91	32	233
Collyria	1	74	1	79	155
Ointments	47	18	44	8	117
Bulk Powders	35	20	24	14	93
Mixtures	22	8	20	15	65
Lotions	1	23	8	27	59
Ear Drops	13	4	1	11	29
Suppositories	8	3	9	0	20
Powder Papers	0	17	0	2	19
Emulsions	4	5	3	3	15
Lozenges	6	0	1	0	7
Collodions	0	3	0	1	4
Inhalants (Vapors)	0	1	0	2	3
Liniments	2	0	0	0	2
Pastes (Water-soluble)	0	0	1	0	1
Pills	1	0	0	0	1
Totals	768	474	779	456	2477

Nineteen classes of pharmaceutical preparations are represented in this table and are listed in the order of their frequency. The first column of figures in the table shows the number of prescriptions in each class in the first-year group which required no compounding, while column 2 indicates those requiring some act of compounding. The simplest act of compounding was considered to be the mixing of two substances to make the final product. Therefore, no prescription of two or more ingredients was called ready-made. In columns 3 and 4 is given the same information for the second-year group. The totals of each class for the whole period are shown in the last column.

Slightly more than 46 per cent (1171) of all prescriptions filled were liquid preparations of some sort and about 24 per cent (606) of them were solutions for oral use. About 38 per cent required compounding. Since no tablets were compounded this class contributed largely toward the ready-made prescriptions (about 24 per cent of the total filled.)

Some conclusions in prescribing tendencies can be drawn. There was approximately 3 per cent decrease the second year

in prescriptions requiring compounding. The total number of solutions decreased somewhat and the percentage total of ready-made solutions increased. Capsules increased in popularity and the pharmacist found it necessary to compound about 5 per cent more of them the second year than the first. The number of ointments requiring some act of compounding dropped about 13 per cent the second year. The number of bulk powders used dropped the second year, but the ratio of compounded and ready-made powders remained about the same. Three sets of suppositories were compounded the first year, but none the second. All the powder papers were compounded, but the popularity of this class of preparation dropped tremendously the second year. Only one pill, and it was a ready-made product, was prescribed during the two years.

Teachers of dispensing pharmacy sometimes question if they should follow closely the trend of prescriptions found in drug store files and adapt their courses accordingly. Under this plan, the teacher would eliminate certain classes of preparations such as pills, since in the store studied, no pills were made during the two-year period. He would also seriously consider dropping the suppositories because the store compounded none of them the second year. On the other hand, should no attention be paid to the files and all the classes of prescriptions be covered as before?

Probably a combination of the two alternatives would be ideal. By a close study of the prescription files of drug stores, the instructor may become familiar with many new ideas in prescriptions which would be of value to his students. He undoubtedly will find some incompatibilities which should be discussed. In covering many classes of preparations in the course, the instructor is able to present a wider variation of compounding principles. Neither the instructor nor the student knows when in professional work a more comprehensive knowledge will be needed. Furthermore, no man can ever know too much about his own professional work.

## Editorials

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### Slips That Pass in the Night

In May of 1940, at the Richmond meeting, the National Association of Boards of Pharmacy passed nine important practical experience regulations effective July 1, 1943. For a quarter of a century quantitative and qualitative standards for practical drugstore experience have been given a great deal of consideration. Committees of many types and from many sources have wrestled with the problem. At long last it appears that a concise statement, recommended by the Committee on Study and Correlation of Practical Experience Requirements of the National Association of Boards of Pharmacy, is available to define the practical experience necessary in most states for the complete licensure. Certainly these regulations represent progress, badly needed, bringing a proper standard to a requirement of pharmacy that has long been most unsatisfactory. Eight of the nine regulations are apparently in tune. One is entirely off key. That this regulation slipped by without causing even a slight ripple in the pharmaceutical events of the time is difficult to understand.

The second regulation needs revision promptly, which should be made at the Detroit convention lest pharmacy be found guilty of inconsistency and double standards.

The second regulation reads:

"To assure a well rounded practical experience, not more than six months of credit per year shall be given for practical experience in a hospital pharmacy and not more than six months credit per year shall be given for practical experience obtained in a pharmacy or drugstore compounding less than 1000 prescriptions annually or devoting less than fifty per cent of its activity to the sale of drugs and medicines and supplying pharmaceutical service."

How inconsistent! In a hospital pharmacy presumably there may be too many prescriptions—in some drugstores not enough. It should be remembered that the purpose of practical experience is to provide safe pharmaceutical service to the public.

It is only with the first portion of this regulation, that which deals with hospital pharmacy, that this paper is concerned. Hospital pharmacy usually is pharmacy in its purest professional form. It is sufficiently important to warrant a regulation devoted solely to it. Such a regulation must state that a year of experience in a hospital pharmacy, under the supervision of a registered pharmacist, will be accepted in lieu of a year of practical experience in an approved drugstore. If necessary the hospital pharmacy may be defined and approved as drugstores are.

In each class of students there are some who have hospital pharmacy as their final objective. They are not interested in many of the things that pertain largely to the commercial phase. For those who choose hospital pharmacy as their life's work a year of experience in a hospital pharmacy is of greater value than a year in a drugstore.

There are now a large number of desirable pharmaceutical internships in the hospitals of the country, the holders of which are preparing themselves for service as hospital pharmacists, or by means of postgraduate work running concurrently, for positions outside of drugstores. Because of the demand for and the interest in this type of pharmaceutical service these internships should be encouraged.

Then there are those who cannot possibly comply with the requirements of the proposed legislation. An example is a nun. A Sister of Mercy who completes the work for the degree, Bachelor of Science in Pharmacy, to take charge of a hospital pharmacy cannot be expected to serve a part of a year in a drug store to gain full registration.

At the meeting of District No. 5 of Boards and Colleges in Fargo, N. D., on April 28-29, the following resolution was unanimously passed:

Whereas, the Boards and Colleges of District No. 5 believe that one year of practical experience in a hospital pharmacy provides as good practical experience as that obtainable in a retail pharmacy, and

Whereas, the intent and purpose of such experience is to provide training by actually practicing the profession of pharmacy, and

Whereas, experience in merchandising and sales of non-professional items does not contribute to professional experience, and

Whereas, it is not imperative that proprietors of retail pharmacies employ those pharmacists who have acquired their practical professional experience in a hospital pharmacy, therefore be it

Resolved that the N. A. B. P. revise the minimum standards for pharmacies in which practical experience will be recognized after 1943, as approved by the N. A. B. P. at their 1940 convention, so that one year of practical experience in an accredited hospital pharmacy under the supervision of a registered pharmacist be approved as accepted as meeting the partial requirement for eligibility to licensure examination and furthermore

Be It Resolved that the N. A. B. P. take such action at the 1941 convention so that the establishment of pharmaceutical internships in hospitals will not be delayed.

Rudolph A. Kuever,  
State University of Iowa.

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## What's Right With Our Business?

Someone has said that even the great Atlantic ocean is powerless to sink a small boat unless the water gets inside. Someone else said, "Mental Attitude is more important than Mental Capacity." Both of these truths are of great significance to the present-day druggist. Apparently all too many of us have been shipping a little water these recent none-too-placid years. Let us inventory a few of the causes of negative thinking:

1. We have had questions about this business of the practice of pharmacy, its permanence, good faith, integrity, solvency, supervision and management.
2. We have had questions brought about by the new-found fear of inflation, fear of long-time commitments while conditions are unsettled.
3. We have had the questions: Is there a real chance of prosperity in the practice of pharmacy? Aren't we far below the average in earnings?
4. We have territorial unrest. Druggists in the agricultural middle west seek the droughtless west coast. West coast men believe themselves damned to starvation because of strikes and freak politico-economic panaceas. New York druggists can't make a living because "it costs too much to live in New York", and small town druggists wish they lived in some big city because "there aren't enough people with money living in my little burg."

And there we have it. Those are, as nearly as I can isolate them, the principal forces and forms of propaganda, fact or fiction, which would destroy me. If I would be destroyed, the road is plainly marked—let these forces dominate me—that is all. I, the druggist, am a dead duck. But why should I be destroyed? Are there not more powerful forces which will preserve me if I give them free access to my mind and heart?

A direct answer can be given to many doubts and questions—but we need more than that. There must exist in our minds and hearts a deep-seated conviction and a real enthusiasm for pharmacy and our future opportunities. How do we look compared to college graduates in other vocations? A study by the U. S. Department of Education shows that college graduates three years out of college have an income of \$1,500 per annum; five years \$1,800, and eight years, \$2,300. Assuming we all understand that the "median income" is the income of that person in a group who has on one side of him exactly as many persons with lower incomes as he has on the other side with higher incomes—we find that considerably more than half of the "seasoned" druggists would be found to be standing on the high side of the median in this group of college graduates. And it is still true if we compare ourselves with the group eight years out of college. It is human to exaggerate incomes of persons in other vocations and to minimize our own, but the cold fact seems to be that pharmacy ranks high indeed as a gainful occupation for those persisting beyond a successful apprenticeship. Our final source of negative attitude was territorial unrest. Here and there one may find a few cases of territorial futility, but for the most part it is an alibi of those salesmen who need a handy basket for their personal failures. It is only human to charge territory with our troubles, to discount every personal advantage existing in present territory and credit other territories with such fantastic lures as would put even their chambers of commerce to the blush. Bluntly put and with exceptions granted, MY territory and MY town is the best territory for the cock-simple reason that it IS MY territory. If there is anything sound about this territorial unrest that should really be blamed on territory, we'd all be happy and prosperous if only we all swapped territories. Shall we do that?

*The Time To Have Fun.*

Most of us spend more of our time working than doing any-



thing else. If we but realize that we have to get our fun out of our work (or else we will not have much) and that work is more fun than anything else in the world, we're in a position to enjoy life. We're in the proper niche. With that feeling comes a sense of contentment and a peace of mind that always imbues one who is enthusiastic about his work. In the words of Oliver Wendell Holmes, "It is faith in something and enthusiasm for something that makes life worth living." From Robert Louis Stevenson: "*An aim in life* is the only fortune worth the finding. And it is not to be found in foreign lands, but in the heart itself. To be what you are and to become what you are capable of becoming is the only end in life."

Stanley D. Long.\*

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## A Pension Fund for Pharmacists

This is a plea for professional self-reliance. We pharmacists are fortunate in that our profession is one which affords a decent living to the preponderant majority of its adherents. We must recognize, however, that certain uncontrollable factors such as changing business conditions or health failures result in economic disaster for some of our brethren in pharmacy, and that these unfortunate colleagues come to their old age without being able to carry on their business activities to provide adequate food, shelter and clothing for themselves and their dependents. It is true that vast progress has been made in recent years in providing various forms of relief for persons in such economic distress; we must remember, however, that pharmacists who have owned and operated their own stores are not eligible for Social Security benefits. Moreover, as members of a great profession, we should all like to feel that all of our colleagues can be sure that they need never have to depend solely on public charities for their support.

With these thoughts in mind, several months ago, I proposed that there be established a pharmaceutical pension fund, maintained by contributions from our own group, and to be distributed to needy pharmacists by sectional governing boards. The response to this suggestion was overwhelming. Soon

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\*Mr. Long is a retail druggist who is serving his fourteenth year as a regent of the University of Nebraska.

after its original publication in *Drugs Topics*, I was deluged, not only with letters from pharmacists and manufacturers promising support of the plan, and encouraging immediate action, but also with contributions. The original suggestion had been that each owner of a pharmacy contribute \$1 a year, thus assuring an annual basic fund of \$60,000, but many sent checks for \$5, \$10 and more, along with fervent expressions of hope for the success of the project.

Unfortunately, it is impossible to administer a nationwide pension fund without first creating a responsible organization to handle the details of collecting and distributing funds. Consequently, all of these checks had to be returned to the contributors. Obviously, the pharmacists of the United States are ready to support a pension fund, provided only that the plan can be put into action on an actuarial basis, and in the opinions of many, if linked to a group insurance arrangement with a reliable surety company. Let us not let this opportunity slip from our fingers! Let us determine to see this thing through!

The American Pharmaceutical Association is meeting this August in Detroit. At that meeting, I plan to recommend the creation of a committee empowered to investigate the requirements for such a fund and to devise a concrete plan for getting it into operation at the earliest possible moment. This movement will have a dual purpose. It will not only serve to place the prestige of the American Pharmaceutical Association behind the fund, but it will also redound to the benefit of the Association. As I visualize it, the fund would be open to participation by all pharmacists, but would be administered by a body linked closely to the American Pharmaceutical Association. The result would no doubt be a restimulation of interest in that organization's manifold activities in the forward advance of pharmacy, which would probably lead to a greatly increased membership. Participation in the pension plan might very well be the focal point about which could be built up a newly invigorated American Pharmaceutical Association which could properly claim to be the representative of all American pharmacy. The opportunity lies before us to accomplish great things. Let us strike a blow for the emancipation of American pharmacists from the fear of insecurity!

J. Leon Lascoff.

## What Has Happened To Pharmacy?

In the Review for 1940, the Rockefeller Foundation announces the gift of some half-million dollars to the University of Michigan for the development of a School of Public Health. Quote: "The School of Public Health of the University of Michigan, operated for many years as a division, will now be on a parity with other schools of the University. It will function in close association with the Schools of Medicine, Engineering, Dentistry, Education, Nursing and other *allied units*. Particular emphasis will be given to public health administration, medical epidemiology, biostatistics and sanitary engineering. The aim of the School will be to embrace in its curriculum those social and professional studies and services essential to a broadened consideration of public health."

If one didn't happen to know that a College of Pharmacy existed at Michigan, the omission of pharmacy as an *allied unit* would not be quite so noticeable. Just why, in this particular instance, was pharmacy omitted? One may think of any number of reasons—none of which are satisfying! Has pharmacy as a closely allied science of medicine and as a public health servant failed to make itself sufficiently known on the campus of Michigan, that it was not mentioned along with the major Schools of the University which will be associated in developing the new School of Public Health? Surely, pharmacy should be one of the more important units of such a set-up! Or, is it because that pharmacy as a science and as a profession which has promoted the cause of public health for so many decades, has degenerated where it should be mentioned only in a 'whisper'?

William A. Prout,  
Medical College of the State of South Carolina.

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## "Our" Pharmacopocia

Nearly a year has passed since the U.S.P. Convention was held in Washington. Prior to the meeting of this Convention, this Journal carried several editorials pointing to what we considered shortcomings in the system of providing adequate

drug standards for the people of the United States, and urging certain changes in this system.

At the Convention we were joined by a large number of delegates in presenting a series of recommendations for changes in the existing order which led to the appointment of a committee to revise the constitution and by-laws and to the unprecedented arrangement for an adjourned meeting of the Convention within two years in order to pass upon the report of the committee. So far no report or statement has been issued by this committee and the Board of Trustees to which a long series of recommendations was referred at the convention has not officially acted upon any of them unless this has been done without the usual blare of trumpets that accompanies even minor features of the revision work.

In the meantime the Revision Committee has proceeded with its work through the usual sub-committees and one meeting of the whole committee has been held to consider various phases of the revision work. There has been an additional meeting of the Sub-committee on Scope which is the all-powerful group that determines what shall and what shall not be listed as official in the U. S. Pharmacopœia.

The average pharmacist and physician who read the releases of the Revision Committee emanating from the chairman's office and usually printed verbatim in the pharmaceutical and medical journals have little conception of the inner workings of the Revision Committee. We have had an opportunity to study the political set-up of the present committee at close range.

Up to the present time the work of the U.S.P. XI has been dominated largely by a few individuals. This domination comes about by adroit political maneuvering and ruthless disregard of democratic parliamentary procedure.

Among the recommendations made to the Convention last May was one urging "cooperation with the Revision Committee of the National Formulary to achieve greater coordination in the issuance and content of these two legal standards, thereby making them of greater value to physicians, dentists, pharmacists, governmental agencies, and the public."

The U.S.P. and N.F. are equal standards for drugs under the Food, Drug and Cosmetic Act. The question is often asked why there should be two books. We shall discuss this question in another article. The fact is that today there are

two books and both are recognized by law. Also, both are kept up and maintained by the financial contributions of the pharmacists of the United States resulting from compulsory purchase of the books. New Jersey's contribution since 1936 has been about \$25,000. We have a right to ask why we should be put to the inconvenience of having official drugs tossed back and forth between the two books when standards given in either volume are equally legal and binding.

If present plans are carried out we shall have the unique spectacle of the U.S.P. including tablets as dosage forms of some drugs and not of others even though tablets of all are used. If a drug is of sufficient importance to be included in the U.S.P. it stands to reason that the commonly used dosage forms should also be included. If, however, there is already an official dosage form in the National Formulary it seems unnecessary to move it into the Pharmacopœia. To be consistent, dosage forms should appear wherever the drug appears but the fact that there are two books and that the N.F. has previously included dosage forms of U.S.P. drugs raises certain issues which should be settled in the interest of the users of the books. There should be a definite policy.

The American Pharmaceutical Association which publishes the National Formulary asked for a conference with the U.S.P. Board of Trustees to discuss the problems which had arisen and to formulate a definite policy with reference to the domain of the two books. Although the secretary of the A.Ph.A. is also the Chairman of the Board of Trustees of the U.S.P., the powers which control the Board have prevented such a conference to date, even though the chairman called a meeting for that purpose on one occasion and a motion to hold such a meeting was apparently carried on another occasion but later rescinded.

How is this possible? Perhaps the answer may be found in the axis which has been set up to control U.S.P. administration.

By the selection of a secretary of the Board of Trustees who is subservient to the Chairman of the Revision Committee in his position as a teacher in a College of Pharmacy and who also holds the position of Secretary of the N.F. Revision Committee and by the election of the Chairman of the Sub-Committee on Scope to both the Board of Trustees and the Revision

Committee there has been created a type of interlocking directorate which would very likely be quickly broken up by the Government if it could be shown that a matter of business is involved. And now that a Federal court has decided that the American Medical Association can be guilty of violating the Sherman Anti-trust Act, it is not impossible that those who pursue high-handed and arbitrary methods in any phase of the work of the U.S.P. Convention or its Revision Committee or Sub-Committees may also be called to account.

The formulation of standards for drugs and the determination of which drugs shall be included in the official compendia is a matter of extreme interest and importance to the American people and there is no man in American medicine or American pharmacy big enough to force substitution of totalitarian methods for the democratic process of arriving at decisions affecting any phase of the revision work.—Robert P. Fischelis, in *New Jersey Journal of Pharmacy*.

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## The Menace of Schools to Pharmacy

Now that the "Menace of Women to Pharmacy" is a thing of the past, and the "Menace of Deans to Pharmacy" is pretty well pushed into the background, a new menace arises calling for a new slogan "The Menace of Schools to Pharmacy." The inspiration for the new menace is to be found in a blocked off news item in the June 30th issue of *Drug Topics* which declares that the department of pharmacy of Howard College (Birmingham) has offered a plan to relieve the local shortage of pharmacists by granting a degree in pharmacy to premedic students. As a justification for such a procedure, it is pointed out that the medical and pharmaceutical professions are closely allied and that education in one is valuable in the other. That pharmaceutical and premedic training is of mutual advantage to each group we do not deny, but the justification for giving a pharmacy degree for premedic training would be comparable to a Presbyterian Seminary giving a Doctor of Divinity degree to a premedental student because teeth are of mutual advantage to both dentists and Presbyterian preachers. If the Presbyterian seminaries will only adopt this policy, it may relieve the present shortage of



preachers in our Presbyterian churches. There may be one flareback, however, to the scheme. What will the medical men and the dentists do when they learn that we are robbing the source of supply of students for their colleges when they are already claiming the shortage of dentists and doctors is a menace to public health? Also, what effect will this competition have upon the beautiful interprofessional relationships that we have lately been cultivating so assiduously. Of course, if premedic students are required to satisfy all the requirements of an accredited college of pharmacy both as to the length of time of matriculation and as to completion of the requirements of the curriculum, no objection can be raised. The giving of pharmaceutical degrees to premedic courses can do nothing but belittle the whole system of pharmaceutical education in the minds of men and women and in the minds of pharmacy students and retail druggists alike. Any institution doing this becomes a menace to pharmacy.

Rufus A. Lyman.

## The Editor's Page

If any one has any doubt about what is happening in pharmaceutical education in this country, he should read *Pharmaceutical Education on the March* in this issue. Not only will the reader obtain a vast amount of information, but he will acquire an inspirational urge sufficient to carry him through the sweltering summer months and plunge him into the work of the next academic year with vigor and hope. A perusal of the data reveals many trends in pharmaceutical education which each may follow up at his own pleasure. I shall attempt to call attention to but a few things. Especially noticeable is the increase of laboratory work in practically all lines both as regards time given to such work and the improvement in equipment. Laboratory courses in pharmacology and bioassay are especially stressed. This might be expected because of the immense importance which the biological group has attained in these latter days in pharmaceutical practice. It is not possible to evaluate these improvements in the terms of their importance. Dean A. F. Schlichting of the St. Louis College of Pharmacy, in his modest way wrote, "It seems that we really have nothing to report that will help you in your picture of progress during the year. We have made practically no changes in curriculum, equipment, organization, or otherwise. Our major efforts during the past year have been toward improving our financial setup." What could be more important than the stabilizing of the financial support of an institution and it is a basic fact in progress. In a way, equally as modest, Dean A. B. Lemon of the University of Buffalo, writes that he has "nothing that is publishable" and yet in a three page statement he tells of the work of an institution in which finances are not a problem, but in which constructive thinking and planning and acting is elevating every phase of life within and without the institution for the intellectual and the spiritual growth of those who are the teachers of students of pharmacy and those who are to practice pharmacy and those who are already practitioners of pharmacy. But the most striking fact about pharmaceutical education is that progress is not going on in a few scattered institutions. The progress is universal. It permeates the whole teaching structure. One senses the power in the move-

ment and realizes that pharmaceutical education has outgrown its Model T stage and is riding in a Lincoln Zephyr. But this is only half the story. See what is happening to pharmacy outside of the instructional institutions themselves, as a direct result of the progressive educational program. Space permits the mentioning of but a few. The passage of the prerequisite law in Massachusetts; the obtaining of state support for pharmaceutical education in New Jersey, Connecticut, and Rhode Island; the continued and ever increasing recognition of pharmacy as a public health profession by the appointment of pharmacists on boards of health, and in other positions having a public health responsibility; the appeal of government agencies to foster drug plant experimental work; the establishment of the American Institute of the History of Pharmacy and the general interest in historical pharmacy in all sections; the continued interest of pharmacy in the activities of such national organizations as the American Association for the Advancement of Science, and the American Council on Education, and the continued and increasing interest of these organizations in pharmacy; the increasing interest shown by pharmaceutical manufacturers and wholesalers in the support of pharmaceutical education by gifts of money for equipment and scholarships; the practically unanimous support of all parties in the work of the American Council on Pharmaceutical Education; the development of a finer professional attitude of the medical and the dental professions toward pharmacy; and last and most important of all, the support of the retail druggists of pharmaceutical education and their declared determination from every part of the country that the shortage of professional help shall not be allowed to lower the standards of pharmaceutical education and defeat the march toward a finer professional service, which has become our heritage as a result of an educational program which has its beginnings in the days of the colonies. Even Dr. R. L. Swain, who has insisted time and again in the last five years that our program of pharmaceutical education has not been sold to the retail druggists, has changed his mind. We quote his own words from *Your Pharmacy and Mine* in Drug Topics of June 30, "Every now and then I bump into some rumor that pharmacists are not in sympathy with the educational standards now observed by colleges of

pharmacy, but I am convinced that they are in full sympathy with them and are enthusiastically and completely in agreement that they must be rigidly supported and maintained. I get around the country quite a bit; I participate in the programs of a fair number of state pharmaceutical associations; I sit down and chat with friends throughout the country on all kinds of subjects, and I have yet to find any sentiment in favor of lowering our educational standards. \* \* \* To me, pharmaceutical opinion, as expressed by the rank and file of pharmacists, is pretty dependable, particularly when it concerns things essential to the progress and development of the profession. The pharmacists of America can be counted upon to stick by our standards of pharmaceutical education, and make no mistake about that!" Pharmaceutical education is not only on the march, pharmaceutical education is marching on.

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"The college of pharmacy which meets today's needs today, is one which can boast of earnest, efficient, competent, well paid and cultured fulltime teachers; laboratories, classrooms and libraries equipped with modern teaching facilities; administrators who have the courage of their convictions and who are willing to go to the source of finances for education and fight for pharmacy's share of funds for higher education without compromising pharmacy's position as one of the health professions which places the public welfare above private gain. \* \* \* The age of an institution and the housing on its premises of a U. S. P. office or laboratory are no longer signs of its quality as a teaching or research institution." Thus spoke Dr. Robert P. Fischelis in the April number of the *New Jersey Journal of Pharmacy*. This is the advice which one of her most distinguished and able alumni gave to the Philadelphia College of Pharmacy on the advent of a new administration. It is quoted here because almost in a word Dr. Fischelis has set the standard which a college must meet if it is to make any contribution to pharmaceutical education and practice in this day.

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A significant suggestion was made recently by Mr. Harry R. O'Brien, Editor of the *Dirt Gardner Section of Better Homes and Gardens*, before the students of Ohio State University, College of Pharmacy. He called attention to the fact

that the pharmaceutical journalists of today are not pharmaceutically trained men and what is reflected in their writing stresses business and advertising and not professional pharmacy. This, of course, is not wantonly done. It is due to ignorance of the field in which the pharmacist operates, but there results a current literature which is devoid of any professional color. Here is the place where the laymen, at least, gets a part of his ideas as to the status of pharmacy. Mr. O'Brien's remarks inspired a number of pharmacy students at Ohio State to register in journalism as a minor. We hope that Ohio State will continue to foster the plan and may others try it. One of pharmacy's greatest needs is well trained pharmaceutical writers in the journalistic field. Again, pharmacy may owe a great debt to a plain dirt gardner for stimulating the introduction of such a movement.

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Out of Ohio State comes another worth while suggestion. The local student branch of the American Pharmaceutical Association has suggested the desirability of a national meeting of the student branches of the Association at the same time and place of the annual meeting of the parent Association. Thy have gone further and declared their willingness to assume the responsibility and work incident to the realization of such a national conclave. The writer has never been enthusiastic about student branches because through the years he has never been able to see that the American Pharmaceutical Association was giving or could give the pharmacy student anything except a membership and a journal at a cut rate figure. There has been a sizable membership in the combined student branches and if any considerable number of these students had continued their A. Ph. A. membership after graduation it should have halted the declining birth-rate in the organization. Whether a student "sticks" to the Association after graduation is the test of the worthwhileness of the student branch. It is a wholesome sign when a group of students recognizes the need of contact with other groups and the annual meetings of student groups might be the very thing needed to vitalize the American Pharmaceutical Association. If the parent association really wants the "new blood" that it has been talking about for so many years and will actually give these young people an opportunity to make

their influence a factor in that association, the writer can visualize the dawn of a new day for the A. Ph. A. These students may be as vital to the A. Ph. A. as the Sunday school is to the church—and as the Sunday school eventually becomes the church—so the student branches must eventually become the American Pharmaceutical Association.

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Late in March there came a letter from Dr. J. Leon Lascoff, who is always yearning to do something helpful for his fellowmen, asking for suggestions as to some way in which we might bring social security to the aged and unfortunate of our profession. The following was the writer's answer:—"I heartily believe in the principle of help which you have suggested in your letter and I believe every profession would do well to assume responsibility for the welfare of its aged and unfortunate. I think it would have a worth while effect on ourselves and would increase our respectability and develop morale. If we undertake such a plan, I believe it ought to be based on some kind of an insurance scheme which will give some stability to it, and to do that, the plan would have to be financially sound. Then on top of that we could ask for voluntary contributions of a purely philanthropic nature, as you suggest in your letter, which could be used to take care of emergencies as they arise. It figures out on paper, that it would be easy to raise \$60,000 and I believe it would not be difficult, if it were possible to get the plan before the retail druggists of the country in such a way that they would realize the importance of the undertaking. I suppose what I am saying is about what the fraternal insurance societies are doing in principle. In thinking it over, I am not so sure but that principle applied to a pharmaceutical organization such as the A. Ph. A. or the N. A. R. D. would be the very thing that would make the organization grow. If something like that could be done, it would appeal to every druggist, every teacher, and every student of pharmacy. It might make a great national pharmaceutical organization possible as well as bring some measure of security to aged members. Evidently, if we ever have a membership growth in the A. Ph. A. we will have to do something that is not now being done. I am wondering if you would not like to write an editorial or a letter along the lines you have suggested for publication in the July



number of the American Journal of Pharmaceutical Education? It would set other people to thinking and that is the first step in any public movement." (See Editorial—A Pension Fund for Pharmacists)."

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In the April number of the Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association is a paper on "What is Wrong with Teaching Doctors About Drugs" by Dr. Adam P. Leighton, secretary of the Maine medical registration board. The original title of the paper was "What is Wrong with the Teaching of Materia Medica in Medical Schools". It was published elsewhere and we will not repeat, but this paper is a timely one and should be read by all teachers in schools of pharmacy for it would be well for all of us to obtain Dr. Leighton's point of view and relish his sympathetic attitude. Too frequently we pharmacists have been prone to criticize the medical curriculum and when we do, we do it from the pharmaceutical point of view and too often I am afraid, that has been done hoping to increase our prescription business. If the medical men should criticize the pharmaceutical curriculum from their point of view, they could probably point out a number of instances where it could be greatly improved. Being one of those who had medical training at about the same time Dr. Leighton did, I can say that in the medical school of our day, we were taught diagnosis. After the condition was diagnosed, the next thing to do was to use something that would destroy the cause of the disease or change the metabolism of the individual toward the normal. That we were taught. The thing we were not taught, was the way the tool we had to use appeared in commerce. There is where the medical curriculum failed in those days. A tincture or a fluidextract meant nothing to me. If I had had a brief laboratory course in elementary manufacturing pharmacy, so that I could have seen and touched and made a few of the tools I was to use in the practice of medicine, I would have approached that practice with greater confidence and understanding. I question whether a lot of practice in prescription writing would have helped me much. What I needed was something more fundamental and more tangible than that. If Dr. Leighton's work as an examiner will impress this fact upon the teachers of medical students, he

will have made a real contribution to the young practitioner of medicine and a real contribution to the practice of pharmacy.

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Sometimes the writer feels that we pharmacists are not fair to ourselves and to the cause we represent. When attending the meeting of the American Council on Education in Washington on May 3, Dr. Fischelis, while eating lunch, suggested that we grab a taxi and go over to the Institute of Pharmacy for the unveiling. "For the unveiling of what?" I inquired. "The Proctor memorial of course" was the answer. When we got there the audience was small—not what the occasion deserved. Many fine things were said by the speakers, but they must have felt that they were talking to each other. The funeral aspect was depressing. After the function was over, a local druggist complained of the smallness of the group and he pulled from his pocket a postcard announcing the event. He was much chagrined that he had been notified of the ceremonies on a postcard. He said a national affair should have been made of this event and there are others who felt likewise. Escape into the open brought relief from the mausolean atmosphere and one wondered what kind of a reception Paracelsus would have received from American pharmacists if he had come to town? Would we have taken advantage of such an opportunity to place pharmacy before at least American pharmacists and perhaps before the American public?

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Recent months have seen the passing of a number of men who have rendered a distinctive service to pharmaceutical education. Few of the readers will have heard the name of Edgar Albert Burnett, and yet his service to pharmaceutical education as the chief administrator of a great university may be greater than any service rendered by a member of his pharmacy faculty because of what he made possible. It is true that an administrator must render his service to the different units of a university, not by what he, himself, can personally do but what he makes possible for others to do. Such men deserve more recognition than they usually receive. Dr. Burnett gave a full measure of time, thought, and financial support to pharmaceutical education and is entitled to recognition as an outstanding patron of pharmacy.—Dr. Daniels of the University of California has written of the long

service of Prof. Frederick W. Nish. Prof. Nish was a home lover, he loved the institution and the state he served. The influence of men who confine their efforts to the welfare of their own institution and to their own students often do the most effective and lasting work. That Prof. Nish did with all the force he had. The passing of Dean C. B. Jordan and Dr. Edward Kremers removes from American pharmacy two of the most colorful characters of our day. It is impossible to evaluate the lives and work of men when we are filled with emotion at their passing and yet there is the urge for paying tribute from which we cannot escape. Dean Jordan stands out in the picture as the most aggressive exponent of everything that was best for the advancement of pharmaceutical education and pharmaceutical practice. Fair and honest to the nth degree toward cooperator and opponent alike, loyal to friends and causes, there was never a question where Dean Jordan stood. Perhaps his greatest contribution to pharmacy was his work in the field of professional relations when he stressed the fact that the basis for professional relations was a better pharmaceutical service and not political maneuvering with the other professions. Perhaps of greater importance was his work which resulted in the creation of districts of the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy. This movement has been the most important factor in American pharmacy in bringing about a common understanding of the mutual problems of education and legislation. We shall miss the lovable, militant Jordan and we shall see to it that his efforts have not been in vain. When one tries to pay tribute to Edward Kremers he finds himself bereft of words. I hope it is not sacrilegious to repeat the words that came into the writer's mind when the message came announcing the death of Dr. Kremers,—They were "And they sang a hymn and went out." Dr. George Urdang, in the Kremers memorial, has enumerated the remarkable accomplishments of this brilliant man. There are other reasons than his great scientific knowledge that for forty years caused a flow of the best young minds in this country to Madison to sit at the feet of Edward Kremers. It was never my privilege to be a student of Dr. Kremers, but for more than thirty years at the annual pharmacy meetings he sought me out and took me to a quiet corner in a restaurant, where over a pretzel and a cup

of coffee, he talked about those things men do not talk about in the class room or in groups. It was there that I first sensed the real Edward Kremers and the realization of what the prophet meant came to me when he said—"Your young men shall see visions and your old men shall dream dreams." And for those visions and dreams thousands of men in American pharmacy, who felt the impress of Edward Kremers' refined, virile, creative, and lovable personality will be eternally grateful.

Rufus A. Lyman.

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### Brookley Field

Mr. Will Brookley, retired pharmacist of Lincoln and a former Senator of the State of Nebraska, recently received the following telegram:

"The War Department has recently designated the new Air Corps field at the southeast Air Depot in honor of Captain Wendell H. Brookley. It is gratifying to know that the War Department selected his name as a mark of honor to an outstanding officer of the Air Corps who served his country with distinction. The recognition on the part of the War Department for duty well done will perpetuate his name throughout the service to which he gave his unmeasurable devotion."

Signed—George H. Brett, Major General,  
Chief, Air Corps, U. S. Army.

The Captain Brookley mentioned in the telegram was the son of Ex-Senator Brookley, a former student of the College of Pharmacy of the University of Nebraska, and a registered pharmacist. He entered the service during World War I and remained in the Air Corps for a number of years after the close of the war until he met his death in the line of duty.

Ex-Senator Brookley is well known for his interest and activity in pharmaceutical affairs. It was during his term of office as Senator that the legislation erecting a College of Pharmacy in the University was introduced. His cooperation and influence were largely responsible for securing the passage of this act.

## Gleanings from the Editor's Mail

Thank you very much for the copy of the April number of your Journal. It is an interesting periodical. I join with you in hoping that the new Institute (American Institute of the History of Pharmacy) will flourish.

April 29, 1941. G. C. SELLERY, Dean College of Letters and Science,  
The University of Wisconsin.

The April number of the American Journal of Pharmaceutical Education has come to hand and been scanned with profit. I wish to thank you for the courtesy.

May 27, 1941. WM. S. MIDDLETON, Dean, The Medical School,  
The University of Wisconsin.

We beg to acknowledge with thanks the receipt of your kind letter of March 21 and valuable "American Journal of Pharmaceutical Education", Vol. 5, No. 1, 1941 and shall be much pleased to receive back numbers and future numbers of your Journal as issued.

We have placed your name on our mailing list of Tohoku Journal of Experimental Medicine for exchange and we are completing Vol. 39, No. 1-2, 4-6 under separate cover by today's mail.

Kitayobantyo, Sendai.

May 8, 1941.

K. YOSIOKA, Librarian.

I wish to acknowledge your letter of May 7th regarding the notice of internships in pharmacy being offered here which I had forwarded to your school.

We shall appreciate the notation to be published in the Journal of Pharmaceutical Education in July. (See Miscellaneous Items of Interest.) Last year we sent notices to only some half-dozen of the eastern schools of pharmacy, and received little response in the way of applications. Only one of these was appointed; a former student at Rutgers and at Ann Arbor, Michigan. This year we decided to cover a somewhat larger territory, but not all of the accredited schools.

Response to the notices sent out this year has been somewhat better than last year. Ten or twelve applications have been received, three or four of them coming from women, and from widely scattered schools. One inquiry has come in from a student at Creighton University in Omaha. Two applications are in from Texas, two from Alabama, two from New Jersey and one each from two or three other states so far. Notices were not sent further west than Nebraska, and some of the schools in the east and south were omitted from mailing list.

Women students were not actually barred this year, but we will probably appoint only male internes. Much of the work here consists of manufacturing, stock handling and dispensing from large containers which is a bit too strenuous for women pharmacists. We usually have one woman pharmacist on regular full-time staff who is assigned to dispensing and prescription filling in either hospital or out-patient dispensing service. With calls to military service cutting our staff down

we are putting on three internes instead of two, and may want to place one or two of them on our regular staff when internships are ended.

ROBERT S. FUQUA, Chief Pharmacist,  
The Johns Hopkins Hospital.

May 22, 1941.

We are receiving numerous requests from all sections of the country for negro pharmacists and this college is unable to meet the demand.

CHAUNCEY I. COOPER,  
Howard University.

June 4, 1941.

I have required my dispensing classes to study C. L. Swinyard's article on prescription pricing in the October 1940 issue of the *American Journal of Pharmaceutical Education* and they declare that his suggestions are the most practical of any they have seen. Several of these students are working in stores now, and agree that his method is a usable one.

JOSEPH B. SPROWLS  
University of Colorado.

May 16, 1941.

I should like to make a suggestion for a department in the *Journal* to be entitled "Examination Questions" or something similar. I think all teachers would like to get ideas on new types of examination procedure, new types of questions, or just simply additional questions in various subjects. I know I could get valuable ideas for examinations on "Pharmaceutical Testing and Assaying" from teachers in other schools. Possession of a large and varied and up-to-date file of questions composed by men of varied experience from all over the country could not but result in improvement of examinations and of teaching.

GUSTAV CWALINA,  
Creighton University, College of Pharmacy.

June 10, 1941.

We take great pleasure in mailing you under separate cover a recent number of the "Revista Vida Nueva" (edited since 1909) published under the direction of Dr. Octavio Montoro.

We shall be glad to establish an exchange between your interesting Review and ours. You shall therefore receive our Review every month and trust that through our exchange we may bring about a closer scientific relation in connection with the medical studies effected in your country, as well as in ours.

DR. FRANK CANOSA, Secretary,  
Havana, Cuba.

April 15, 1941.

I am perturbed. Pharmacy is always beset with many problems. One of the more acute at the moment as you know, is the enrollment in its colleges. The profession is frankly worried over the effect of our national emergency on pharmaceutical service because of its withdrawal into military channels personnel already engaged in the drug business and students training to become druggists. Statistics seem to show clearly that a shortage in pharmaceutical man-power has developed and that only through energetic action on the part of all, particularly by the colleges of pharmacy, can a normal balance be



restored. The premise for this balance is that we must maintain the present numerical level of personnel or national public health will suffer. The college share in keeping our ranks up to strength involves selling the profession to a larger number of high school graduates. The problem of how to do this is turning many an administrator's hair grey. The present day high school senior is a pretty skeptical individual. He rationalizes any word picture presented to him about a vocation in terms of what does it get him. We are turning out materialists, not altruists, nowadays. Any sales talk we offer therefore must be materialistic to be effective.

If our high school graduates are interested in pharmacy it is because they are seeking professional status which means to them (1) professional service as their major activity, (2) corresponding professional prestige and position, (3) reasonable professional income, (4) hours of labor comparable to most other professions. To those of us who give vocational guidance lectures to interested high school seniors each year questions involving the four points above are continually posed. If our enrollment is to be built up we must answer in such a way as to indicate a favorable comparison with contemporary callings. I wonder how many without glossing over facts just a tiny bit can give the answers the student hopes for. When we answer we must try to describe in the light of a profession, a business in which the personnel is too busy with department store merchandising to think much about genuine health problems; in which it is more interested in the question "can you sell" than it is in "can you render additional pharmaceutical service." We must make attractive a profession that is moving to the manufacturer and away from the pharmacist. If we describe pharmacy exactly as our college graduates will find it, the high school seniors lose a lot of their enthusiasm. So we educators are on the horns of a dilemma. We need students but to get them in the quantities we feel necessary we have to put tinsel on the tree. That is not fair.

Why do not we admit there are too many drugstores for more than a small percentage to ever become truly professional? Why do not we do one of two things? We might call this threatened shrinking of enrollment a blessing for the help it could be in reducing the number of stores now in operation, or the alternative is to continue selling pharmacy as a profession to our high school seniors and at the same time selling methods of bringing more professional business to each retail druggist, so that when the youthful high school senior becomes a registered pharmacist he will not be disillusioned with respect to his professional hopes and ideals. The former would require courage of a sort we do not have. It would mean limited budgets and a lot of other unpleasantness. It would mean many headaches. The latter can be accomplished effectively only with the aid of the former.

We are teaching to better the profession. One of the obvious ways is to secure more real pharmaceutical business for each store. So many of our stores fill one to two prescriptions a day. If we could change this picture to twenty-five to fifty a day, we could better justify our four-year training and calling ourselves professional men and women. The prescription business of today, even if it were expanded as Dr. Swain and others like myself for example would like to see it, cannot do this. Fewer drugstores is really the answer. Lessened enrollments in our

colleges is a step in that direction. Again, do we have the courage to take it?

We all realize that correcting any evil is not a one-man job. Certainly the evil of having far too many drugstores for the real drug business available is not. We know that restricted enrollment in itself is not the answer. It is a small part, but an important part nevertheless. If it is but a partial answer, who holds the other factors? Mostly they reside in the practicing section—our retail druggists. They would have to lend a helping hand by not interfering when the pinch of scarce help began to hurt. For example—they would have to refrain from seeking legislative relief by removal of academic requirements for the practice of pharmacy in order to secure more and cheaper help. Many of the stores would have to be willing to sell, to merge, or close up. All this to benefit those more fortunate who were left. All this to thicken the cream of real pharmacy so that the remaining competitive units would have enough professional business to make each a professional store and each pharmacist a professional man.

A lot of us as teachers would feel the pinch at first, but we would be doing something for pharmacy. Again, do we have the courage? I do not think we have it. Also, I do not believe it worth our sacrifice if cooperation of the same sacrificial kind is not forthcoming from the others who must help. And I do not believe they are willing despite the fact that nearly every retail druggist bemoans the fact that there just is not enough truly pharmaceutical business to keep up the pretense of professionalism for himself and store.

On the other hand I do not believe that now is an ideal time to pull our academic and business heads out of the sand, honestly face the deplorable situation we are in because of too many retail units. Get together—all of us—and change the picture. We are great paper writers, speech makers and let George do it-ers, but most of all we are unpleasant fact-dodgers. Let us become do-ers, not dodgers.

I am fully aware of the practical hazards and difficulties of the course I suggest. I can recite the arguments against it as well as the next. Sad to relate, I believe a number of these, too. I, too, lack the courage as a single individual to embark upon the course were I in a position to do it. But I am willing to recognize the only real solution to bringing pharmacy back as a one hundred per cent profession is this, so I add my voice to the others that have cried aloud in the wilderness in the hopes that someone who can help will hear.

L. WAIT RISING,

June 10, 1941. University of Washington, College of Pharmacy.

### Recent Subscribers

Neimuth, Edward—National Magnesia Company, Atlas Terminal, Glendale, New York.

Rossi, Dr. A.—218 North 7th Street, Gainesville, Florida.

Savage, Mr. J. L.—307 Park Place, Charlottesville, Virginia.

Ragland, Mr. Ellsworth—2801 Guilford Avenue, Baltimore, Maryland.

## Pharmaceutical Education on the March

**Alabama Polytechnic Institute, School of Pharmacy.**—Upon recommendation of the president, a resolution was passed by the board of trustees, at the June meeting, that, effective July 1, 1941, the department of pharmacy shall be organized and set up as a separate school to be known as the School of Pharmacy with L. S. Blake as head professor of pharmacy. This action was taken in order to meet all the requirements of the American Council on Pharmaceutical Education. For a number of years pharmacy has been a unit of the School of Chemistry and Pharmacy.

In order to provide an opportunity for deserving young men to obtain a pharmaceutical education and to fill the growing demand for pharmacists in this state, a cooperative course in pharmacy will be established beginning with the fall term of 1941. The course is called cooperative, because it is made possible by the cooperation of retail pharmacists with the school. The retail pharmacist provides a job which pays a definite salary, and the head of the school with the approval of the retail pharmacist, selects two high school graduates to fill that job. The plan so arranges the college instruction on an alternating basis that the young man attends college one semester and works the succeeding semester returning to college in the summer session. His partner alternates with him in school and on the job. In this manner each student secures progressively his theoretical and practical training. The cooperative course requires six years for graduation. At the end of this time, the student has completed the regular four year course in pharmacy and has had twenty eight and one-half months practical experience in the retail drug store. Young men selected for this course must meet the usual entrance requirements for the regular four year course. In addition, they must show that they are financially unable to attend college unless this plan is adopted. Cooperative training in engineering has been in successful operation at Auburn for several years and the school of pharmacy is anticipating that this pioneering step in pharmaceutical education will be equally successful.

**The University of Buffalo, School of Pharmacy.**—I wish that I might give you a glowing picture of progress in our School but frankly I am not very good at fabricating news material. I find it extremely difficult to blow the horn regarding my own activities. We are blessed with so many excellent facilities here for carrying on our work that we are not concerned over the matter of physical equipment, teaching facilities and many of the problems that plague schools of pharmacy less favorably situated. As a privately endowed institution, we are very much concerned over the effect that the draft and war industries may have upon our enrollment. We are not beginning to meet the demands of the area for pharmacists and if the numbers are to be further reduced by the efforts of the defense program, we feel that the retail drug stores in the area may be very short-handed before long.

Within the past month we have advised 135 high schools in our area that we have several eight hundred dollar scholarships—(two

hundred dollars a year for four years)—for applicants who have good scholarship and show unusual capacity for leadership. To date, we have not received a single application. The fact that our profession has got into the position where it is no longer attractive to a number of outstanding students is a source of deep regret to me. Even with an acute shortage of pharmacists and two hundred dollar a year scholarships, we are still unable to interest unusual boys and girls to come in and help us reform a situation, in which the average drug store appears to be earning its revenue from the soda fountain and pin-ball machines.

I still have hope that the products of the four year course will not be satisfied with practicing that kind of pharmacy.

I introduced a new course for freshmen this year, which our catalogue described as 'Pharmacy Orientation'. I had a rather vague idea at the outset as to what I wanted to do but as the course progressed I found it was developing largely into a matter of the portrayal of pharmacy as it is practiced by the retail pharmacists in our area, an appraisal of the personal traits necessary for the type of success that some of our men are experiencing and methods for adjusting individual personalities to meet these requirements. I invited in many pharmacists and experts in the field of personality adjustment to assist in the course and I personally felt that it was a success. I got a great thrill out of it and I plan on continuing it with modifications next year. I recall that Dean W. F. Rudd once attempted a similar course but later gave it up, feeling that there was not enough interest on the part of the students. Perhaps I may have a similar experience.

During the last five years we have lost three members of the pharmacy staff. During that period we have been almost constantly on the alert for a young man who might bring to our staff the type of inspiration and leadership that we have needed since Dean Gregory's death. We believe that we have found this man. He does not wish us to publicly announce his appointment until after the first of August.

A member of my own division, materia medica, will this year complete the work for his doctorate degree and then I feel that we will be in good shape as far as our faculty is concerned. While about fifty percent of our work is given by the faculty of the college of arts and sciences, we still have a staff of nine full time members, all with pharmaceutical training and seven of them with the doctorate degree and all middle-aged. I think that you will begin to hear more from us in research and organization work in the very near future. It takes time to build up an inspired staff but I think we shall have one soon.

We have no new scholarships or fellowships. The twenty-five thousand dollar Dambach Fund furnishes us with sufficient income to make loans to needy students and such income as is not needed for that purpose is used for scholarships. We expect to have two graduate students next year on fellowships.

As stated above, our laboratories, buildings and equipment are adequate for our needs. With the new man coming on next fall, we expect to develop our hospital pharmacy division. A large municipal hospital is one of the teaching units of the university but up to the present time we have not participated very actively in developing re-

lationshps with the pharmacy division of the hospital. That we intend to do.

We have attempted to keep our educational philosophies up to the minute by bringing in to our staff from time to time men from widely scattered institutions;—we now have a graduate of the University of Illinois, one from the University of Wisconsin, one from the University of Southern California and two from the University of Colorado. Our graduate assistants are always imported so that we are able to profit by the experiences of other institutions as brought to us by these graduates of progressive and highly regarded institutions.

I doubt whether there is anything in these statements that is publishable. To me it all seems to be rather personal and non-specific. Aside from the progress which we have made in the reorganization of our faculty, I think I can point with pride to the results of our efforts with the alumni.

We have sponsored an Academy of Pharmacy, composed of only professional pharmacists in the area. It has developed into a real source of pride not only to us but to the profession as a whole.

Our monthly programs developed for the alumni have been well received. Sometimes we were disturbed over the number who turned out to take advantage of the opportunities presented for them but on the whole we think we are making fine progress in our endeavors to furnish our alumni with up-to-date information and to inspire them to the best that there is in the profession.

Of course, our efforts, like the efforts of the Church, too frequently fall upon those who need them least but still we are encouraged. We are satisfied that in a small way we are making our 'refresher courses' and general inspiration effective. I do not want to burden you with specific details of our program. I would much prefer that this communication be considered as a personal one to you. However, if there appears to be anything in this report that can be used to improve your Journal, you are at liberty to use it. (Dean A. B. Lemon).

**University of Colorado, College of Pharmacy.**—During the past year effort has been directed more toward the courses already taught, than in the addition of new ones. Believing that the development of individual initiative on the part of the student is a most important objective, attempts are being made emphasize this part of the teaching. This is being accomplished by giving the student special assignments in the form of individual reports and individual laboratory investigations. Additional courses have also been added so that a student, who has failed or is irregular, may not have to wait a whole year before he can get a course or repeat it.—A considerable amount of new apparatus, chief of which is a fluorophotometer, has been added to the department of food, drug and sanitary chemistry.

**Columbia University, College of Pharmacy.**—Courses leading to the Master of Science degree and to certification in laboratory technology have been organized to begin with the 1941-42 session. The Master's degree will replace the Doctor of Pharmacy degree formerly awarded for graduate study, and is based on the general requirements for this degree in Columbia University. The requirements provide that the



major portion of the study be in courses offered by the college of pharmacy but that elective courses be pursued in other departments including offerings of the medical and engineering schools. The certification program in laboratory technology consists of two years of specified collegiate studies and two years of instruction in applied branches. The latter portion of the teaching is administered by the college of pharmacy.

**The University of Connecticut, College of Pharmacy.**—The Connecticut College of Pharmacy was chartered in 1921 and opened its doors in 1925. Since that time it has run most successfully as an independent institution, but about a year ago our board of trustees came to the conclusion that pharmaceutical education in Connecticut could be greatly benefited by amalgamation with the University of Connecticut. After several conferences with the president, A. N. Jorgensen of the state university and other members of his staff, a bill was introduced into the Connecticut legislature at the 1941 session terminating the corporate existence of the Connecticut College of Pharmacy and transferring legal title to its assets and obligations to the University of Connecticut. This was passed by the legislature and signed by the governor in May. The amalgamation will take effect as of July 1, 1941. The University of Connecticut was established in 1881 as the Storrs Agricultural School, and in the last ten years has shown remarkable expansion and development so that it now is taking its rightful place as one of the leading state universities in the east. It is located at Storrs in the northeastern section of Connecticut. It has the following schools, all located at Storrs: the graduate school, the college of agriculture, the college of arts and science, the school of business, the school of education, the school of engineering, and the school of home economics. The College of Pharmacy of the University of Connecticut will remain at New Haven where it has occupied buildings formerly used by the Yale Medical School. At some future time, if through state appropriation or private endowment sufficient funds are made available, it is likely that the property in New Haven will be disposed of and the college moved to Storrs. The intention of the University is to continue the present staff. No other action by the board of trustees is likely to have as important effect on the future of pharmacy in this state as this amalgamation.

**Creighton University, College of Pharmacy.**—During the past year over 80 volumes, chiefly reference works in the various pharmaceutical sciences, have been added to the pharmacy library.

**Detroit Institute of Technology, College of Pharmacy.**—New courses include an additional semester of pharmaceutical dispensing, making a total of four semesters and a course in pharmaceutical problems which may be elected by senior students with faculty approval and can be taken under any staff member.—A new laboratory has been equipped for experimental work in physiology and pharmacology and a small room adjacent to the laboratory with facilities for housing experimental laboratory animals has been provided.—The library has been completely remodeled, furnished in panel-work, with new shelving, tables and lighting.—New apparatus includes a Beckman pH-meter and an anatomical model to be used in courses in biology.



**Duquesne University, School of Pharmacy.**—Following a survey of the situation in all schools of the university, the president made it mandatory for all departments to include in their curricula a minimum of 16 hours of English, 4 hours of ethics, and 4 hours of logic. Two hours of orientation were placed in the freshman year. A comprehensive examination in English must be passed by all graduates.—Laboratory work in pharmacology was offered for the first time.—Three new wall display cases have been added through the generosity of a local pharmacist and new fluorescent lighting has been installed.—Rho Chi has been invited to establish a chapter at the university.—A pharmacy clinic was presented to the pharmacists of the Pittsburgh district and also at Johnstown, Pennsylvania before the pharmacists of the Cambria-Somerset counties.

**Ferris Institute, College of Pharmacy.**—Problem courses have been instituted for seniors. Before graduation each student will be expected to submit a thesis on some individual problem work in the field of his major interest. This is asked for on the assumption that a student after having spent three years in college, should have come to some definite conclusion as to what field of pharmacy he wishes to pursue and that he should develop himself to the highest efficiency in this field by a more thorough study in appropriate electives during the fourth year; and finally, that he is able and willing to submit evidence of such study and of his personal qualifications in the chosen field in writing.

**University of Florida, School of Pharmacy.**—A new laboratory has been equipped for research in pharmacognosy and pharmacology and an additional space has been provided for the animals. As previously announced, Dr. James H. Beal donated about \$500 worth of books and supplies from his private library and laboratory and the state board of pharmacy has given the University \$5,000 for use by the Bureau of Professional Relations for increasing the use of official preparations by physicians.—A new course has been added in applied physiology as a part of the required curriculum of undergraduates.—William Emerich has established a fund to award annually a membership in the American Pharmaceutical Association to the junior student making the highest average for the year.

**Fordham University, College of Pharmacy.**—The University is conducting a campaign for funds among the alumni for additions to several buildings, among which is the chemistry building. The pharmacy alumni have to date made a fine showing in their pledges.

**George Washington University, School of Pharmacy.**—New courses in clinical laboratory methods, laboratory techniques, and special problems will be given next year by the department of pharmacy.—The University has a modern auditorium under construction.—The Henry E. Kalusowski Memorial Laboratory for pharmaceutical research, established last fall by the District of Columbia Pharmaceutical Association, has been functioning profitably during the year.—The administration of the university hospital pharmacy has been transferred to the school of pharmacy. All senior pharmacy students are being required to serve a period of internship in this pharmacy.—The Certified Products

Company is continuing the research associateship established last fall, throughout the summer.—A research associate for the studies in pharmacology has been established. Frank Fortunato has the appointment for next year.—George P. Larrick, Chief of Inspection, Food and Drug Administration, has been appointed to the panel of prominent men who conduct a required course for seniors.

**The University of Georgia, School of Pharmacy.**—During the spring of this year, I asked the President for two scholarships in the school of pharmacy to be awarded to high school graduates of the state on a competitive basis for the best papers on the general subject of *The Pharmacist's Part in the Public Health Program of the Community*. The program was started a little late and we did not secure the publicity on the matter that would have insured a larger number of contestants. It was our idea that this might be a means of directing the attention of high school graduates to a study of pharmacy as it is practiced in his particular community. The whole contest was handled by the high school association of the state which provides for competition in matters of this kind on a congressional district basis. One scholarship was to be awarded in the high schools denoted as "B" and the other in the group as class "C". The high schools of the state are grouped according to size. Class "A" representing the larger city schools and class "B" the smaller city and county schools and class "C" the still smaller schools. An award was made to the Class "B" winner. We are hoping to be able to offer scholarships amounting to tuition for three quarters for one year, or approximately \$150.00 again next year, and an effort will be made to get wider publicity and many more contestants than we had this year.

We have three agricultural experiment stations in the state in addition to the agricultural college located at Athens. One experiment station is located in the mountain section of the state, another near the Florida line and a third about half way between, in which group the College of Agriculture would fall. A substantial appropriation was made by the board of regents to run a series of experiments in these various places in the growing of certain medicinal and industrial plants which heretofore have been imported, in an effort to find, if possible, some new cash crops which might be grown by Georgia farmers. The school of pharmacy of the University system is cooperating in this program and will advise with the growers of these drugs as to a choice of drugs to be planted, the time of collection, the part used, the method of curing, and all assays to be run in the school of pharmacy. Approximately twenty acres at each of the experiment stations are being given over to the growing of these products and sufficient acreage to each drug is given to enable us to determine whether or not the plant can be grown under average farm conditions and whether or not they can be grown at a profit in competition with foreign markets. This proposition represents an effort on our part to prove to the people of the state the importance of pharmacy to the economic welfare of the state, and we hope thereby to make a worth while contribution. In addition to the above experiments, we are studying a number of plant products now growing wild in abundance in the state to deter-

mine, if possible, whether or not they would have any commercial value for medicinal or for industrial uses.

It has occurred to me on many occasions that pharmaceutical education had not promoted the idea of the importance of pharmacy to the welfare of a state, economic as well as otherwise, and that therein lay an opportunity which schools of pharmacy, particularly those identified with state universities, to prove themselves of value to the general welfare of the people of the state, whether it be along the lines of public health or in some industrial capacity as indicated above.

The program as we have outlined it then, constitutes a cooperative movement between the school of pharmacy and the agricultural college, the experiment stations and the state government, and will be a most comprehensive research project. Even if the results in the growing of medicinal or industrial plants prove to be negative, we will feel that we have made a contribution to the individual farmers of the state who might otherwise be persuaded to attempt the growing of products of which they have no information or training and which ordinarily would very probably result in considerable financial loss to them.

The experimental station in the northern part of the state is at an elevation of approximately 2000 feet, the agricultural college at Athens is at an elevation of approximately 1000 feet, and the elevation at the South Georgia Experiment Station will be approximately 250 or 300 feet. The climatic and soil conditions in these areas vary widely, and after one or more years of experience, we will be better able to determine which of these sections is better adapted to the various individual items with which we are experimenting. (Robert C. Wilson.)

**University of Idaho, College of Pharmacy.**—Laboratory work has been added to the course in pharmacology.—The new pharmacy building is under way and when completed will give sufficient room for expansion.

**University of Illinois, College of Pharmacy.**—The physics laboratory has been increased in size and equipment so that its teaching efficiency is greatly improved.—The botany laboratory has been moved to a new location in the unit in order that apparatus which is located in several departments might be used by all to better advantage.—Hereafter the courses in bacteriology and physiology, which were given by the pharmacy school, will be handled by the respective departments in the medical school.—The new curriculum for the year 1941-1942 provides for the elimination of the pre-pharmacy year, as previously offered in the various junior colleges and universities of the state of Illinois, and establishment of the freshman year on the Chicago campus. It also provides for the election of specialized study during the junior and senior years in the fields of retail pharmacy, pharmaceutical chemistry, pharmacology, food and drug analysis, and hospital pharmacy.—The hospital pharmacy has been a service unit to the research and educational hospitals and has furnished fifty clock hours of experience in the compounding of physicians' prescriptions to each senior student. The employment of undergraduate service has been discontinued and in its place have been established positions of graduate assistants in hospital pharmacy. These are based on part time employment, the assistants engaging in graduate study under the provision of graduate work

as established in the colleges of medicine and dentistry.—A new activity was the establishment of the Annual Conference on Modern Pharmacy on April 15-17, 1941 for retail pharmacists of the state. The Conference was attended by 29 paid, and 15 exchange registrants from the pharmacist's store personnel. One evening a joint program was held with the Chicago Branch of the American Pharmaceutical Association at which approximately 125 persons participated in an inter-professional program, sponsored by Executive Dean R. B. Allen, Dr. D. J. Davis, dean of the College of Medicine and Dr. Howard Marjerison, dean of the College of Dentistry. The late Dean C. B. Jordan of the Purdue University, School of Pharmacy was the guest speaker on this occasion.

**Indianapolis College of Pharmacy.**—A course in hospital pharmacy was introduced in 1939 and the type of training was found so satisfactory that the work has been extended and students are now working in the dispensary of the Indiana University Medical Center where prescriptions are compounded for the Long, Coleman, and Riley hospitals.—A course in animal biology has been introduced preparatory to the course in pharmacology, and political science is being offered in the freshman year.—Pharmaceutical Latin has been dropped as a separate course and the material given supplementary to the various courses in pharmacy.—Mr. F. D. Lee, University of Florida, has been added to the teaching staff.—Special effort is being made to keep in touch with the alumni and aid them in advancing their chosen professions.

**State University of Iowa, College of Pharmacy.**—More commodious quarters and new office equipment have been provided for the administrative office.—A Scanlon, Morris type of autoclave has been added to the equipment of the drug service department because of the demand made upon it for sterilized products by other departments. This enables students to obtain experience not only in compounding this type of product, but they are able to carry the product to completion.—Two walk-in refrigerators and a pressure filter have been added to the physical equipment which makes it possible to manufacture certain products without decomposition and at a considerable reduction in cost.—Several items of equipment for graduate work and several graduate courses have been added to increase the scope of the work.—Three graduate fellowships, ranging from \$500 to \$750 have been made available for next year.

**University of Kansas, School of Pharmacy.**—Arrangements have been made which permits senior students to make a brief visit to the Army hospital at Fort Leavenworth, Kansas to observe the routine of Army hospital service.—Dr. Roy A. Bowers has been appointed assistant professor of pharmacy. Roy O. Boyle has been added to the staff as assistant instructor in hospital pharmacy and two graduate assistantships have been established which will be filled by James O. Hoppe, University of Montana, and Warren Rix of Creighton University.—A reading room for the students, a dark room, a special drug grinding room, and two research rooms have been provided. The dispensing laboratory has been remodeled and seven modern wall display cases added. Five hall display cases have been equipped with fluorescent

lighting.—A new course in hospital pharmacy has been introduced. All senior students spend one week each semester preparing drugs and filling prescriptions at Bell Memorial Hospital in Kansas City, Kansas.

**Long Island University, Brooklyn School of Pharmacy.**—There has been a continuing improvement during the year in library and laboratory equipment. The graduation of the first full class with the Bachelor's degree in Pharmacy is a definite contribution to education.—Dr. Cosmo Ligorio has introduced a course in food and drug analysis, limited to exceptional students in chemistry. The course is given in the junior year, with the purpose of encouraging a trend toward research in the senior year.

**Louisville College of Pharmacy.**—The pharmacy laboratory has been completely overhauled. New plumbing, new tables with serial locks, and a full series of new Harvard trip scales have been installed. The lecture room has been equipped with pedestal chairs, the laboratory for botany and histology has been rearranged. Oil immersion lenses, a Spencer Stereo demonstration microscope, new analytical weights, a spectroscope, a Bausch and Lomb Duboscq colorimeter, and a potentiometer have been purchased. A new dispensing laboratory, 18 by 48 feet, and equipped with ten units each accommodating two students, a 27 foot work table with four sinks and a specially designed wall cabinet for storage of surplus stock and apparatus have been provided. The dispensing units are wired for individual lighting and outlet for plugging in electrically operated devices. Each unit will be supplied with dispensing stock of about 200 items and each student will have his individual locker, apparatus, and torsion balance. Other equipment for the laboratory consists of suppository molds, homogenizers, and everything necessary for filling practically every type of prescription. Two additions have been made to the teaching staff. James W. Miles will be an assistant in chemistry and Dr. A. E. Slessor will take over the work of Prof. F. D. Stoll in pharmacy while the latter is taking work at Purdue during his sabbatical year.

**Loyola University, College of Pharmacy.**—The library has been rearranged and more than a thousand volumes of new texts and journals have been added during the year.—A pamphlet and reprint collection have been systematically arranged for student use.—The furniture and equipment and library assistance has been increased.—The hospital pharmacy program inaugurated last year at the Charity Hospital has been expanded to include a select group of sophomore and junior students.—A fine collection of old pharmaceutical apparatus and stock from an old French New Orleans pharmacy, which was established in 1874, has been received. This collection, together with other previously received collections, forms the basis of a good historical pharmacy.—A considerable amount of equipment has been added. It includes a water still, a pill coater and polisher, a new Stokes tablet machine, several analytical and torsion balances, and special apparatus for the department of pharmacology.

**Massachusetts College of Pharmacy.**—A research project is in progress in the field of dermatological preparations in collaboration with the



Committee on Dermatology and Syphilology of the American Medical Association on invitation of its chairman, Dr. John Godwin Downing. In addition to the investigation of new therapeutic agents and preparations, the study includes attempts to improve the methods of employing agents now in common use. Facilities for clinical trial are available at the Boston City Hospital where Dr. Downing is dermatologist.—On June 4, the Master of Science in Pharmacy degree was conferred upon four candidates. These were the first degrees granted under the new graduate curriculum adopted a year ago.—A feature of the new graduate curriculum is a course in hospital pharmacy. Those who elect this course are required to serve an internship in an approved hospital in addition to the class work required.—This spring a medicinal plant garden was established on the grounds of the Bussey Institution adjoining the famous Arnold Arboretum of Harvard University. The garden now contains 280 varieties of medicinal plants.

**University of Minnesota, College of Pharmacy.**—New birchwood acid proof tops have been placed on the tables in the sophomore and junior laboratories. Other laboratories have been completely renovated and additional storage cupboards provided. Additional apparatus including a Sayboldt viscosimeter has been placed in the analytical laboratory and a tablet counter and bottler supplements the equipment of the manufacturing laboratory. The ventilating system in some of the laboratories has been greatly improved.—Twenty-five post graduate scholarships to the annual 3-day Pharmaceutical Institute have been established by the three wholesale drug companies of Minnesota. Each scholarship covers all costs (tuition, room, board and garage storage) of attending the Institute, except transportation. Registered pharmacists of Minnesota are eligible for these scholarships.—The will of the late Adelle C. Melendy, pioneer druggist of Minneapolis, left an estate in excess of \$100,000 to the University of Minnesota to finance special lectures, research, fellowships and scholarships in the college of pharmacy. Special provision is made for the use of \$150 each year for a lecture by a pharmacist of national reputation on a subject intended to advance the interests of professional pharmacy and for \$50 each year toward support of a research project in the medicinal plant garden. The remainder of the income is to be used for fellowships and scholarships. Mr. Melendy was intensely interested in pharmaceutical education. He was one of the few early pharmacists who were instrumental in organizing the Minnesota State Pharmaceutical Association and in establishing a college of pharmacy at the University of Minnesota.

**University of Mississippi, School of Pharmacy.**—A special grant has been made available to the whole University for the purchase of \$75,000 worth of books over a three year period. Each division shares the responsibility for making recommendations for purchase and has also been allotted a definite amount for expenditure.

**University of Montana, School of Pharmacy.**—The pharmacy courses were revised during the year and changes in the United States Pharmacopœia Supplements and National Formulary Bulletins were included.—Many books have been added to the pharmacy-chemistry library and rules were changed so that students can use the stacks and current



journals.—Considerable new equipment has been added since the laboratories have been transferred to the new building. This equipment includes Torsion and analytical balances, an electric biological refrigerator, a number of Fries electric ovens, an electric emulsifier, and electric Kjeldahl distilling apparatus, a muffle furnace, an ultra violet demonstration lamp, an electric steam sterilizer, a research microscope, hemoglobinometer, a saccharimeter with Lippic polarizer, an electric drug mill with wet and dry mixing units, and many other smaller items.

**University of Nebraska, College of Pharmacy.**—The establishment of a junior division for the express purpose of better advising has closed the year with marked success. In the system, each student has an assigned adviser and assigned consultation period which he must keep with the same regularity and with the same responsibility that he must meet class assignments.—Mr. Don L. Love, a philanthropic citizen of Lincoln who died late in 1940, provided in his will the sum of \$800,000 for the building of a University library. The library is under construction and will be ready for occupancy in September 1942.—Through the generosity of the children of Mr. Daniel J. Fink, a retail druggist of Holdrege, Nebraska and a practitioner in this state for fifty years, the pharmacy library has been enriched by the gift of Mr. Fink's private library. This library contains approximately 2000 volumes of journals and books, many of which are pharmaceutical classics that are priceless.—The departments of pharmacognosy, pharmacy, and physiology and pharmacology have added a thousand dollars worth of new permanent apparatus during the year.—The Breon Manufacturing Company of Kansas City, Missouri is continuing a \$500 fellowship established last year, for the study of the digitalis-like glucosides.

**North Dakota Agricultural College, School of Pharmacy.**—The prescription practice has been increased to fourteen quarter hours; pharmaceutical chemical analysis has been increased to twelve; organic pharmaceutical chemistry to nine; and biologicals to eleven quarter credits.—A new course has been added dealing with pharmaceutical manufacturers' products.—Dale L. Kinsley, Ohio State and University of Florida, has been added to the staff.—A laboratory designed especially for pharmaceutical research and well equipped for certain types of work has been completed during the year.

**Ohio Northern University, College of Pharmacy.**—The course in manufacturing pharmacy has been made a service division of the student health department. Only upper classmen are permitted to take the course. Two new private laboratories have been provided for the departments of pharmacy and pharmaceutical chemistry.

**Ohio State University, College of Pharmacy.**—The Ohio legislature has passed a law requiring one year of store experience in addition, to graduate from a recognized college of pharmacy prior to the examination for registration. Mr. Harry R. O'Brien, who is the editor of "Plain Dirt Gardener" in "Better Home and Gardens" criticises the

pharmaceutical profession rightly for depending upon untrained strangers for its publicity spreads. As a result of Mr. O'Brien's criticism, a number of pharmacy students are taking journalism for their minor. It certainly would be worth while to encourage some students to specialize in pharmaceutical journalism.—New laboratory desks have been installed in the graduate and manufacturing laboratories and those in the other laboratories have been thoroughly cleaned and reconditioned. New catalytic reduction apparatus equipment, ovens, petrographic microscopes, and glassware have been added to the equipment stock for student use.—Enzyme and vitamin assays will be introduced for the first time the coming year. A complete stock of crude drugs arranged in glass containers according to botanical classification is now available in the laboratory for student use and a display case for unusual drugs and items of historical interest has been arranged by students. Many of the samples are specimens that have been prepared by the students themselves. An herbarium is also in the process of development as a teaching adjunct for all the classes in botany and pharmacognosy. This training will enable the student later when he wishes to make a professional window display, to go out in the near-by fields and get the plants to make it.—New courses which will appear in the curriculum this fall are macroscopical pharmacognosy, glandular and biological products, organic preparations, pharmaceutical technology, and advanced prescriptions.—During the past year, graduate work was offered in this institution for the first time. Work is now offered toward the master's degree in materia medica, pharmacognosy, pharmaceutical chemistry, and pharmacy.—Three graduate assistantships are available.—The research laboratory has been equipped with fine microscopes, a new kymograph, and a complete set of pharmacological equipment and extraction apparatus.—The University has been allotted three and one-half acres of choice ground for the establishment of a drug plant garden. Practical use of it will be made for the instruction in the art of planting, harvesting, and the curing of drugs.

**Oregon State College, School of Pharmacy.**—Laboratory work in pharmacology will be given for three terms instead of for one as heretofore. A new two-credit course in pharmaceutical law, embracing pharmaceutical jurisprudence, state and national, will be given.

**The Philadelphia College of Pharmacy and Science.**—The department of pharmacology is to be augmented and plans are now under way for the possible erection of a building which will be dedicated entirely to the teaching of biochemistry and pharmacodynamics.—No new scholarships or fellowships have been added, but there have been extension of a number of research fellowships, such as that of the Edible Gelatin Manufacturers' Research Society and the Sharp and Dohme fellowship.—In the department of physics, a complete apparatus has been constructed for the study of supersonic wave effects in connection with antiseptics and emulsification.—Through gifts, four properties have been acquired, some of which will be razed to enlarge the Kilmer Botanical Gardens and others may be converted into a dining hall and recreation rooms.

**Purdue University, School of Pharmacy.**—The curriculum will undergo a considerable change beginning with the school year of 1941-42. The four option course will now be changed to two options consisting of an option A, known as commercial pharmacy, and an option B, for pharmaceutical chemistry. The professional and pre-medic options will be continued for two years and then dropped.—This change in options has strengthened the commercial pharmacy curriculum by including more work in physiology, physiological chemistry, practical pharmacy, commercial pharmacy, and economics. The new courses which will be introduced and required of all commercial students are commercial pharmacy, practical pharmacy, and physiological chemistry one semester each and one full year of physiology.—The pharmacy extension department has extended its activities during the past year in its efforts to bring about a closer cooperation between the dentists and the pharmacists.

**St. Louis College of Pharmacy.**—The major effort during the past year has been toward improving the financial setup.

**Medical College of State of South Carolina, Department of Pharmacy.**—Dr. Charles A. Stoneburg has been appointed as an additional instructor in pharmacology. Two new laboratories for pharmacy and one for botany have been provided and supplied with new equipment.

**University of South Carolina, School of Pharmacy.**—All offices, classrooms, and laboratories have been completely renovated and modernized. In several instances the renovation included the replacement of walls, ceilings and floors. Two private offices have been added and each has been equipped with a research desk and new furniture. New classroom equipment of the latest design has also been added. A combination laboratory for dispensing and analytical pharmacy has been provided with the most modern type of equipment. Twenty-seven individual prescription units and sixty-eight cupboards are provided in this laboratory and a modern fluorescent lighting system has been installed. General equipment includes wrapping counters, label cabinets, prescription files, typewriters, drying ovens, fume hood, and new torsion prescription balances. Adjoining this laboratory are two specially constructed supply rooms and an analytical balance room. The latter is equipped with new glass enclosed wall cases containing new analytical balances. A general store room is equipped with sample shelving and drawer space for apparatus and supplies, individual steel lockers, and well lighted glass display windows. The departmental library has been transferred to the new University library where all material has been properly catalogued and segregated for use. A special appropriation for library purposes has been utilized for the purchase of additional textbooks, reference books, periodicals, and for completing the files of periodicals and for binding.

**Rhode Island College of Pharmacy and Allied Sciences.**—As a result of a bill recently passed in the state of Rhode Island, this institution with the coming year will receive generous financial support from the state.

**Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy.**—The last legislative assembly appropriated a substantial sum for the support of pharmaceutical education in the state. A new course has been added in experimental pharmacology and bioassay. Next year there will be added to the course a series of motion pictures showing the use of various drugs in clinics.

**Temple University, School of Pharmacy.**—A course in history of pharmacy which was formerly given to freshmen did really arouse enthusiasm, but when it was, two years ago, transferred to the junior year, the interest shown was very great.—Extra-mural courses were continued throughout the year in the largest county pharmaceutical associations in the state, seminars were conducted for five nights in the county seats and were well attended and marked interest was shown. The experience is convincing that pharmacists will take the same interest in professional and scientific developments which is found in other professions, if the program is offered at an accessible point and at a convenient time.

**University of Texas, College of Pharmacy.**—The laboratory work in materia medica has been increased to four hours per week.—The two new engineering buildings will relieve some of the congestion in the present chemistry pharmacy building and the amount of space allotted to pharmacy will be increased. Equipment added during the year include a polariscope, a microbalance, a high vacuum pump, standardizing research equipment, a 4 speed kymograph, a micro combustion furnace, several constant temperature hot plates, and an Ainsworth "Chainbalance" with electric dampener.

**University of Tennessee, School of Pharmacy.**—The department of commercial pharmacy has been completely remodeled and stocked with 6,500 preparations. This will greatly increase the facilities for practical pharmacy teaching.

**Medical College of Virginia, School of Pharmacy.**—In December 1940 the new two million dollar hospital was completed and dedicated, becoming a part of the combined institution. The increase in prescriptions from the hospital, together with the ever increasing clinical facilities, will offer greater opportunity in practical work in dispensing pharmacy for the senior students.—Plans are now completed and work has begun on the construction of the Crockett Memorial Dispensing Laboratory. It will be formally dedicated at the beginning of the academic year of 1941-42.

**State College of Washington, School of Pharmacy.**—New courses have been added on biological parenteral solutions.—The drug plant garden has been greatly enlarged. It is probable that there will be two new teaching fellowships in pharmacy for next year, making a total of five. A new research laboratory for pharmacy with complete equipment to accommodate three graduate students will be opened in Morrill Hall. A cooperative study is being carried on with the S. B. Pennick Company in the cultivating of five acres of belladonna.

**University of Washington, College of Pharmacy.**—Special effort has been placed upon the development of the research program. Researches are being carried on in scientific drug plant culture directed toward making pharmaceutical agriculture a dominant economic factor in the northwest. A study of the effect of climate and soil on the growth of cascara is now being supported by a Callison fellowship. A study of the Vitamin D content and the stability of oil in canned salmon is being made in cooperation with the National Cannery Association. Under a National Formulary grant a study is being made directed toward developing standards for certain aromatic drugs and collecting data on their deterioration. Pharmacological research is being conducted under an Upjohn industrial grant. Appreciating the fact that retail pharmacy is the backbone of the profession and deserving a major share of pedagogic interest, a research service has been established so that the pharmacist may have his prescription and cosmetic departments analyzed on a statistical basis by research students. This service points the way to a more profitable and more professional operation.

**Wayne University, College of Pharmacy.**—The laboratory work has been increased in the courses in pharmacology, physiology, pharmaceutical botany, pharmaceutical chemistry, and pharmacognosy. New lecture courses have been established in public health and pharmaceutical ethics.—New additions to the staff are Dr. Carl C. Pfeiffer, associate professor of pharmacology; Morris Mellen, special instructor in prescription practice, and Margaret Munro, assistant technical librarian.—A building on the main campus provides new laboratories in pharmaceutical botany and pharmacognosy as well as three additional classrooms. Changes in the old building at the Medical Center includes remodeling of the operative pharmacy laboratory and the establishment of a balance room and the electrification of the pharmaceutical chemistry laboratory. About one thousand dollars worth of additional equipment has been provided and the additions made to the books and periodicals in the pharmacy library to the extent of several hundred dollars in addition to the regular library allocation.

**Western Reserve University, School of Pharmacy.**—A graduate course in the chemistry of synthetic drugs was introduced in September 1940. Laboratory work has been added to the course in toxicology and it includes semi-microchemical tests for poisonous agents.—The pharmacy building has been extensively repaired and remodeled the last year with the aid of funds contributed by the Northern Ohio Druggists Association.

**West Virginia University, College of Pharmacy.**—A study is being made as to the advisability of changing the curriculum so that subjects such as vitamins, etc. which are now being given in various courses shall be grouped as a separate unit and given at a later date, perhaps in the junior or senior year. These subjects are of sufficient importance to group together and stress in a greater manner than has been done heretofore. Beginning July 1, Mr. Craig W. Waugh, A.B., B.S. in pharmacy, 1938, will be added to the faculty. New quarters for the student health service costing approximately \$140,000 are being built and our dispensing unit will be located in this building and will be in

charge of Mr. Waugh. This will free the member of our present faculty from the health services duties and will permit a more agreeable arrangement of schedules. In the building program which is being carried out at the University, there is hope of obtaining more adequate and suitable quarters for the college of pharmacy. Such quarters have been promised, but a definite assignment has not been made.

**University of Wisconsin, School of Pharmacy.**—Required courses newly added to the curriculum include bacteriology, physiology, pharmacology, and advanced drug assay. In addition, through the cooperation of both the school of medicine and the state of Wisconsin General Hospital, it has been possible to develop a course in hospital pharmacy. The course in organic chemistry has been increased from four to eight credits, and the course in pharmacognosy has been modified to render it more inclusive in scope. The beginning course in pharmacy is to be given, for the most part, in the sophomore year. Through the cooperation of the Wisconsin Pharmaceutical Association and the Wisconsin State Board of Pharmacy a lecture course has been organized which will enable senior students to hear addresses by outstanding retail pharmacists during three of the four meetings of the class to be held each month.—Two fellowships have been established by the Wisconsin Alumni Research Foundation.—Upon the completion of their work during the summer session, two graduate assistants will be replaced by new appointees for the 1941-42 academic year.—Emeritus Prof. Edward Kremers has received from Fritzsche Brothers, a substantial grant for further research and for the publication of a text on plant chemistry.—Several pieces of new equipment have been added to the manufacturing laboratory. An animal experimentation laboratory has been developed; though this is of comparatively small size, it is adequately equipped as to cages, lighting, and ventilation.—In order to promote better inter-professional relations, a plan has been formulated whereby committees from the senior classes of the school of pharmacy and of medicine will meet at intervals throughout the academic year for round-table discussions. It is the thought of the staff of the school of pharmacy that much can be done to foster a more complete understanding between the two professions by young people who are soon to enter their respective fields of practice.—During the past academic year, the staff of the school of pharmacy took an active part in creating the American Institute of the History of Pharmacy and in furthering the work.—Revenue derived from the Hollister Pharmaceutical Library Fund has made possible a study of the first London Pharmacopœia conducted by Dr. George Urdang. The results of his research are expected to be published in the near future.

**Xavier University, College of Pharmacy.**—In answer to your request for material for the section "Pharmaceutical Education on the March," I wish to say that additional equipment for the dispensing laboratory was acquired during the past year and new equipment for the bioassay laboratory will be supplied this coming year. Several new journals have been added to the library.



## Notes and News

At the annual reorganization meeting of the board of pharmacy of the state of New Jersey, Percy N. Jackson of Wildwood was elected president. Adolph V. Palumbo, Bernardsville, vice president, and Charles Schamach, Patterson, treasurer. Dr. Robert P. Fischelis was reelected secretary and chief chemist of the board.

Dr. Robert P. Fischelis, Secretary of the New Jersey Board of Pharmacy and member of the New Jersey State Department of Health, has been named an editorial adviser to "Medical Care", a new quarterly publication devoted to the economic and social aspects of health service. This journal is published for the Committee on Research in Medical Economics, Inc. of New York City and is edited by Dr. Michael M. Davis.

Announcement has come that Mr. Joseph Rosin has been elected to fill the vacancy on the United States Pharmacopœial Committee of Revision caused by the death of Dean C. B. Jordan.

A letter has just been received from Dr. C. H. Hampshire, Secretary of the Pharmacopœial Commission, stating that on the night of May 10th, the headquarters of the British Medical Council, where the office and laboratory of the British Pharmacopœia Commission are housed, was struck by heavy explosive and incendiary bombs, and the building largely, though not completely, destroyed. Fortunately there was no loss of life, but many rooms were completely burned out and many memoranda and records, as well as books, destroyed. The main files of the Pharmacopœial Commission escaped damage as these were in the basement, also the manuscript of the new British Pharmacopœia as this had been placed in a safe location in the country, but the Commission has been subjected to very serious loss and inconvenience. They are now continuing their program, which consists of the publication of the Fourth Addendum to the British Pharmacopœia, and Dr. Hampshire, the secretary, reports that they will soon have new accommodations and laboratories in another building, well suited for their needs.

The year at Beirut (American University) has been "unusually quiet," with most of the activity centered on the campus. The University has been cooperating with the government health service by manufacturing serums not unobtainable from abroad, as well as other medicines which the School of Pharmacy is equipped to prepare. The government has recently asked the school to produce certain medicines on a large scale. The Medical School has expanded its consultative and diagnostic work and has continued its public health work in the Boq' aa Plain.—From the Near East Service Quarterly.

With the close of the academic year 1940-41, the North Pacific College of Oregon discontinued its school of pharmacy. It is understood that its equipment has been transferred to the University of Oregon.

**University of Buffalo, School of Pharmacy.**—The Kappa Psi award, the Rho Pi Phi key, the Academy of Pharmacy prize, the Lehn and Fink medal, and the Merck dispensary prize were awarded to Pierre F. Smith. Mr. Smith has been on the University honor roll for four years, received many undergraduate honors, and had the highest

average of the entire graduating class. Benjamin H. Caplin received the Merck prize in pharmacodynamics.

**University of Colorado, College of Pharmacy.**—Dr. C. F. Poe, new Lieutenant Colonel, has recently been transferred from the Army Industrial School in Washington, D. C. to the Quartermasters Depot in New Orleans, La. Colonel Poe was called into active service at the end of the Christmas holidays. During his absence, Prof. Norman F. Witt is acting head of the department of sanitary chemistry.—Five members of last year's graduating class have obtained positions in the U. S. Civil Service. Jay T. Estep, John W. Howe, and Robert L. Johnson are at the Fitzsimmons Veterans Hospital in Denver. Merrill Dicks and Samuel Downs are stationed at the Gorgas Hospital, Panama Canal Zone and Everett R. Berglund, who is in the Medical Administrative Corps of the Army, is in charge of the pharmacy at Lowry Field in Denver.—Dean Homer C. Washburn, Colonel (retired) in the United States Army, was recently called into service long enough to conduct an officers' examining board.—The twenty-seventh annual banquet was held on May 13; over 130 students, alumni, faculty, and guests attended. Awards for scholarships made at that time were:—Lehn and Fink medal, Jack N. Bone; Phi Delta Chi medal, Marion Webber; Rx Girls' Key, Matie Jean Washburn. The Rx Girls' Club instituted the last named award this year which consists of a gold key to be given to the most outstanding senior girl.—W. C. Alexander of Salida has just been appointed to the state board of pharmacy replacing J. W. Murray of Colorado Springs, who has just completed eighteen consecutive years of service.—Dr. Harold C. Heim, a former instructor who took his doctorate in June, has accepted a position as chemist in the United States Civil Service Department. He is now stationed at San Francisco.—Miss Ramona Parkinson will assume Dr. Heim's teaching work.

**Columbia University, College of Pharmacy.**—Dr. August A. DiSomma has been appointed an instructor in chemistry succeeding Dr. T. F. Givens who has become a production chemist with the Bilhuber-Knoll Corporation.—Dr. William T. Redden has been assigned to the department of physiology.—Prof. Henry Taub is on leave, engaged in micro-analytical work for the health department of New York City.—The College of Pharmacy is offering courses in histology and general food bacteriology in the summer session.—Dean Ballard is a member of the University Defense Committee, the function of which is to adjust problems relating to selective service.—Dr. H. R. Halsey of the Zoological department under a research grant provided by Mr. Red Cole, is investigating the effects of athermic short waves on lower plant and animal life.—Thirty-eight candidates were granted the Bachelor's degree at the June commencement.—The Plaut fellowship for graduate study was awarded to William H. Luckey and Saul A. Bell was continued as the Bigelow fellow.

**The University of Connecticut, College of Pharmacy.**—The Bachelor's degree was conferred upon a class of 31 at the June commencement. Prof. Frederick D. Lascoff of Columbia was the speaker and an honorary degree, Doctor of Pharmacy, was conferred upon him during the exercises.—Prizes and awards were announced as follows: Lehn and

Fink medal and the Kappa Psi key, Joseph Kaniewski; the Pharmacy Commission prize, Michael Zygun; the Garvin Memorial prize awarded by the Connecticut Pharmaceutical Association, Frank Andrews; the Aaron Leff biochemistry prize, Ira Wellins; the Connecticut College of Pharmacy Student Branch of the American Pharmaceutical Association prizes, Charles Blumenthal, Robert Sandals, and Myron Levine; the Trustees scholarship, Harold Hersch; the Switzer analytical chemistry prize, John Rosengren; The Huber scholarship, John Nosal; the Bolles sophomore prize, Frederick Casioppo; the Kappa Psi prize, Wanda Butler; the 1930 Class prizes, Marion Borriello; Alpha Zeta Omega prize, Dorothy Glass.—Students recently elected to the Curtis P. Gladding Honor Society are Ira Wellins, Joseph Kaniewski, Robert Sandlas, Harold Hersch, and John Rosengren.—Dean Henry S. Johnson and Prof. Horace J. Fuller spoke recently before the students of several high schools in the state. Mr. Nicholas W. Fenney spoke before the New Haven retail druggists on the subject of cuticolor preparations.—Lieut. Robert H. Alcorn, lecturer in pharmaceutical jurisprudence and Commissioner of the United States Court in the Connecticut district, has been called to active service in the Navy.

**Creighton University, College of Pharmacy.**—Alpha Alpha Chapter of Rho Chi, National Honorary Pharmaceutical Society was established at Creighton on March 14, 1941. Mr. C. Earle Joseph of Parke, Davis and Company and a member of Gamma Chapter was the installing officer. Charter members are Dean W. A. Jarrett, Prof. L. A. Johnson, Jack H. Overman, Francis Kokrda, Norvin C. Jones, Francis A. Walsh, Warren H. Rix, Edmond T. Killeen, and John A. Scigliano. Raphael O. Bachmann was the first new member elected. Active members by transfer from other chapters are Prof. F. E. Marsh, F. V. Potrepka, and G. E. Cwalina. The chapter has established an annual award to be given to the freshman student having the highest scholastic average. Officers for the school year 1941-42 will be: president, Raphael Bachmann; vice president, F. V. Potrepka; secretary-treasurer, G. E. Cwalina. Prizes and awards.—Whaley Prize, Warren Rix.—Merck and Company awards, Edmond Killeen and Richard Nemic.—Lehn and Fink medal, John Scigliano.—The Blackstone Hotel prize, John Scigliano.—Connolly prize, Edwin Becker.—Severin Walter prize, Raphael Bachmann.—University prize, John Moran and Gene Marsh.—Lee prize, Howard Devine.—Jarrett prize, Jack Lee.—Agnes Leahy Sutherland prize, Henry Sprague.

**Duquesne University, College of Pharmacy.**—The following prizes were awarded at the June commencement:—Pharmaceutical Association prize, William F. Ashley; Muldoon Chemistry prize, Louis V. Kasperik; Kreuer Pharmacy prize, William F. Reed; Pharmacy Activities Key, William V. Garrity, with honorable mention to Louis V. Kasperik; Merck awards, William F. Reed and Louis V. Kasperik; Lehn and Fink medal, William F. Reed and honorable mention to Louis V. Kasperik.

**University of Florida, School of Pharmacy.**—At the annual senior alumni luncheon Mr. Joseph M. Branski of the Federal Bureau of Narcotics, was the guest speaker.—Prizes and awards went to students as follows; the William Emerich prize to Arthur G. Zupko; the Merck awards to

Jeanne Louise Scheidler and Martha H. Vidal, the former also received the Ramsaur medal and the latter also the Anslinger award.—At commencement, Everett A. Eyre was graduated with honors and Jeanne Louise Scheidler and Martha H. Vidal with high honors.—The local chapter of Kappa Epsilon won the national scholarship cup for the sorority, and in addition Martha H. Vidal received a signet ring for the highest scholarship average among all members of the national sorority.—William M. Benson, Clifford T. Pacenta, Domingo Donate Torres, and Esteban Nunez Melendez received the Master's degrees at the June commencement.—Dr. P. A. Foote, Miss Scheidler, Miss Vidal, Mr. Pacenta, and Mr. Benson have been elected to membership on Phi Kappa Phi.

**Fordham University, College of Pharmacy.**—Throughout the year all the schools constituting the University have been taking part in the centenary year celebration. The pharmacy school held a symposium on April 23, which was presided over by Dr. Robert P. Fischelis. President Robert I. Gannon gave an address of welcome. The chief speakers and their subjects were:—Dr. Nathan B. Van Etten, president American Medical Association,—Changes in Medicine and Pharmacy during the Past One Hundred Years; Dr. Ivor Griffith, Philadelphia College of Pharmacy,—Education in Pharmacy, and Dr. H. Evert Kendrick, Temple University School of Pharmacy,—Pharmacy and National Defense.—The Pharmacy Academy of Science was addressed by twelve prominent speakers during the school year. The various topics discussed were all allied to pharmacy.—Thirty students, in April, visited the laboratories of Lilly and Parke, Davis & Company, traveling in their private car. On the way home they visited the Institute of Pharmacy in Washington.—Dean Kidder was called to active service in the Army on May 1. During his absence Rev. Charles J. Deane will act as dean.—Dr. L. J. Piccoli has been appointed editor of the *Inter-Professional Bulletin*, the official organ of the Association for the Advancement of Professional Pharmacy.—Dr. Otto F. A. Canis has been elected president of the New York state board of pharmacy and vice president of the New York Academy of Pharmacy.

**George Washington University, School of Pharmacy.**—L. G. Gramling has been reelected secretary of the City of Washington Branch of the American Pharmaceutical Association.—The James Douglas Goddard gold medal for scholarship went to William R. Spence. F. Dale Cottrell and James Conner received the Merck awards, and Gordem Myers was awarded the Morter and Pestle cup for student activities.

**University of Idaho, College of Pharmacy.**—Herman Forslund will continue to teach in the department of chemistry in the absence of Rex Clayton, who is a Reserve Officer called to the service.

**University of Illinois, College of Pharmacy.**—Mr. Byrl Benton of the South Dakota State College was added to the staff on September 1, 1941.—Mr. Elmer King has resigned to accept a position with the Abbott Laboratories.—Prof. E. N. Gathercoal will retire from active service on September 1, with the Emeritus status.—At the June commencement Frank Maher and Ernst Kirch received the Doctor's degree,

the former with a major in pharmacology and the latter in physiological chemistry.

**State University of Iowa, College of Pharmacy.**—The Milo A. Chehak prize went to Irwin J. Lage; the Kuever and the Cooper prizes, to Wayland C. Fuller; the Scherling prize to Elizabeth N. Holmes; the Teeters prize, to Phillip A. Coontz; The Merck awards, to Kenneth H. Stahl and Bernard Lazere; the Lehn and Fink medal, to Robert L. Van Horne. —New Members of Rho Chi are Irwin J. Lage, Dwight L. Mace, Robert L. Van Horne, Delpha L. Donner, A. James Farnham, Elizabeth N. Holmes, Lyle C. Searle, and George T. Weirick.

**University of Kansas, School of Pharmacy.**—At the close of the second semester, each senior decorates his laboratory desk and displays thereon the preparations he has made in manufacturing pharmacy and in prescription compounding. The Kansas State Board of Pharmacy judges these displays, designating the order in which the first five rank. Dr. L. D. Havenhill gave a membership in the American Pharmaceutical Association to the one placing first and smaller awards were given the other four.—In observance of National Pharmacy Week, Dean Reese addressed the Lawrence Rotary Club on the subject "Your Pharmacist." In March he spoke to the Douglas County Medical Society on "More Effective Medication", and in May he took part in a radio round-table discussion on "Pharmacy as a Vocation."—At the seventy-fifth anniversary the exhibits contrasted the pharmacy of today with that of seventy-five years ago. Fluorescent lighted exhibits of modern drugs and medicines, including a display of crude drugs from all parts of the world, were arranged. A reproduction of B. W. Woodward & Company's pharmacy at Lawrence, 1866, was set up in the chemistry and pharmacy building. The prescription case and side shelves were the original fixtures obtained through the courtesy of the Round Corner Drug Company. The original prescription files were obtained from the same source. Show globes, ointment jars, brass and iron mortars, tincture bottles, tincture presses, balances, and other articles were obtained from various sources, representative of that period. A great many of the articles used in the reproduction of this store were the personal property of Dr. L. D. Havenhill and have been collected by him over a period of years. The B. W. Woodward & Company's store was one of the first, if not the first real pharmacy in Kansas. More than a thousand people visited the exhibits, 702 signed the register.

**Long Island University, Brooklyn College of Pharmacy.**—Hugh G. Lieber, professor of mathematics, is decorating the walls of the library with "futuristic paintings", symbolizing the inter-relationship between the pharmaceutical sciences and their relationship to mathematics. Later a brochure on his paintings may be issued.—Paul Kosok, professor of history, is on a leave conducting a series of lectures in the South American republics. His most recent paper was delivered in Spanish, before the Third Congress of the Pan-American Institute of History and Geography.—He has also in his spare time, conducted several symphony orchestras.—Dr. Ralph H. Cheney of the biology department has broadcasted a talk on "Field and Garden Beverage Plants" under the auspices of the Brooklyn Botanic Garden, where he serves



as a resident investigator of economic plants. He has recently been elected secretary and chairman of the program committee of the section on biology of the New York Academy of Sciences.—On June 1st, he left for a three months motor trip through the mid-west and Pacific states, northern Mexico and British Columbia—an itinerary of over 10,000 miles, during which he plans to study the experimental procedure being followed at the marine biological research stations along the Pacific coast of the United States and Canada.—Dr. A. Lichterman, an active alumnus, is conducting on the radio, a series of lectures on food, nutrition, and health.

**Loyola University, College of Pharmacy.**—The mayor of New Orleans has extended an invitation to the college to establish a pharmacy, representative of an early period in the old part of the city known as the Vieux Carré. It has been estimated that a hundred thousand visitors annually will have the opportunity to visualize the transition in pharmaceutical progress during the last century.—Mr. Louis A. Wilson, who received the master's degree in June from the University of Pittsburgh, will return to his place in September.—Joseph Hecker was awarded membership in the Blue Key fraternity and Dr. John J. Grasser was awarded honorary membership. The student branch of the American Pharmaceutical Association held eight programs during the year and also sponsored eight radio broadcasts over local radio stations.—Chief Pharmacist, Albert P. Lauve of the Charity Hospital, Dean John F. McCloskey, and Dr. Edward Ireland recently completed a survey of the pharmacies in thirteen Louisiana state institutions at the request of Governor Jones and Mr. J. N. Snee, director of the institutions. The purpose of the survey was to make recommendations for better pharmaceutical service in these institutions.

**University of Maryland, School of Pharmacy.**—Dr. Paul V. McNutt, administration of the Federal Security Agency, was the commencement speaker on June 7.—Richard H. Barry and Walter C. Gakenheimer received the Master's degrees and Leonard Karel, Kenneth E. Hamlin, Jr., Nathan Levine, and William Arthur Purdum received the Doctor's degrees.—The honorary degree of Doctor of Science was conferred upon Dr. H. A. B. Dunning at the commencement exercises and at the academic convocation in connection with the Centennial Celebration of the School of Pharmacy the same degree was conferred upon Dean W. F. Rudd of the School of Pharmacy of the Medical College of Virginia, and the honorary degree of Doctor of Pharmacy was awarded to Mr. Robert S. McKinney of Taneytown, Maryland.—Dr. Kenneth Hamlin has accepted a post-doctorate fellowship in the department of chemistry at the University of Illinois for the coming year.—Dr. Nathan Devine has accepted a fellowship in the research laboratories of the Upjohn Company effective July 1.—Dr. A. Wayne Ruddy, former Dunning fellow, and who last year held a post-doctorate fellowship in the department of chemistry at Northwestern University, has accepted a position with Sharples Solvents Corporation and will be located at Wyandotte, Michigan after July 1.—Prof. M. J. Andrews of the department of pharmacy, has resigned in order to accept a position as head of the department of Professional Relations of the Read Drug and Chemical Company of Baltimore.—Dr. William Arthur Purdum, who



has been associated with the University of Georgia for the past two years, has been appointed to fill the position vacated by Prof. Andrews.—The Rho Chi society has received the following new members;—Benjamin F. Allen, Richard H. Barry, Alice Harrison, Milton Reisch, Warren Weaver, and Wilson Whaley.—Mr. Whaley was also awarded a membership in the American Pharmaceutical Association by the society for the outstanding work during his sophomore year, and Morton Smith was given a copy of the United States Pharmacopœia for outstanding work in the freshman year.

**Massachusetts College of Pharmacy.**—Dr. Elliott P. Joslin was the principal speaker at one of the meetings of the refresher course given in May. Dr. Joslin gave the introduction to a symposium on "Pharmaceutical Service for the Diabetic."—The following students have been elected to the Rho Chi Society: Rachel Burns, Nathan Glover, James P. Rokas, John T. Karman, Henry R. Peters, Wayne O. Vincent, Edwin E. Wilson, Arthur K. White, E. Warren Heaps, Jr., Stephanie Lach, Alphonse M. Miskinis, Charles Papacostas, Edward B. Turner, Christopher H. Costello, Edmund B. Slowick, and George G. Lerner.

**University of Michigan, College of Pharmacy.**—During the second semester the students and faculty organized a journal club for the purpose of acquainting the students with the current literature of pharmacy and allied sciences. Bi-weekly meetings were held at which two or three student speakers reported on subjects of interest. The attendance was unusually good and it is planned to make this organization permanent.—The speakers at the annual Pharmaceutical Conference held May 20, were Dr. E. R. Serles, dean of the University of Illinois, College of Pharmacy, whose subject was "The Problem of Vocational Guidance for High School Students and Others Entering Our Colleges of Pharmacy" and Mr. Waldo M. Bowman, professional pharmacist of Toledo, Ohio, whose subject was "The Pharmacist and His Community." Dean Serles' paper was discussed by Mr. Ira M. Smith, registrar of the University of Michigan and Prof. Arthur Van Duren, Jr., chairman of Academic Counselors, College of Literature, Science, and The Arts, University of Michigan. Mr. Bowman's paper was discussed by Mr. Arthur E. Crippen, Ann Arbor pharmacist, who has been conducting the extension classes sponsored by the University, under the George-Deen Act.—Following the dinner in the Michigan Union, The Michigan Branch of the American Pharmaceutical Association held its annual election of officers. A colored motion picture, "The Production of Essential Oils" shown through the courtesy of Fritzsche Brothers of New York and Chicago, completed the program.—Prizes awarded at commencement time were; Rho Chi prize, Robert R. Reed and A. A. Rosen; Lehn and Fink medal, William L. Austin; The Merck Awards, Marjorie A. Kern and William L. Austin.—Honorary society initiates were; Sigma Xi,—John B. Data, Mitchell F. Zienty, Esperanza Castro, Chieko Otsuki, and Raymond Warzynski; Phi Lambda Upsilon,—John B. Data, Mitchell F. Zienty and Joseph H. Burckhalter; Phi Kappa Phi,—William L. Austin and Marjorie A. Kern.

**University of Minnesota, College of Pharmacy.**—During the year Donald W. Buelow and Harold Urist were elected to Phi Lambda Upsilon;

Helen E. Brownlee, Arnold C. Neva, Azor Kleven, Harry Simon, Catherine Sneed, Sister Quentin McShane, James H. Boothe, Edward Carlson, Reid Mickelsen, and Heber W. Youngken, were elected to the Rho Chi society; and George E. Crossen, Earl B. Fischer, Laurine D. Jack, Charles V. Netz, Harold Urist, and Allen I. White were elected to Sigma Xi.—The Minnesota State Pharmaceutical Association graduate fellowship was awarded to Donald Buelow; the Association scholarship key to Reid Mickelsen; the Lehn and Fink medal to Arnold Neva; the Wulling Club Key to Ben Benson; the Kappa Epsilon award to Harriet Fisher; the Rho Chi sophomore prize to Raymond Hopponen; and the Kappa Psi Senior Scholarship Key to Arnold Neva.—Dr. George E. Crossen was promoted to the rank of assistant professor of pharmaceutical chemistry.—Dr. Harold Urist is a chemist with the National Oil Products Company of East Orange, N. J.—Dr. Charles V. Netz was reelected secretary of the Minnesota State Pharmaceutical Association for 1942.—Dr. Earl B. Fischer gave lectures about Minnesota medicinal plants to the Minneapolis Botany Club and to a Minneapolis high school group recently.—The Minnesota Resources Committee has appointed a committee to develop drug plant cultivation, to study the collection of medicinal plants now growing in the state, and to study the applicability to medicine of those native plants which are at present not recognized as therapeutic agents. The personnel of the committee is Dr. E. B. Fischer, Dean C. H. Rogers, Dr. G. L. Jenkins, Dr. F. K. Butters, and Dr. F. J. Alway of the University, Mr. G. V. Doerr of McKesson-Minneapolis Drug Company, Mr. L. J. Cleary, Chief Inspector for the Minnesota State Board of Pharmacy, and Mr. T. A. Arneson and Mr. R. A. Callander, retail pharmacists.—Frank L. Bope, Ohio State University and Henry Stackhouse, Creighton University have been appointed to graduate teaching assistantships for 1941-42.—Through the efforts of the Minnesota State Pharmaceutical Association, the pharmacy laws of Minnesota were amended to include additional "causes" for which the state board of pharmacy may suspend or revoke a license to practice pharmacy. Two of these added "causes" are for "unprofessional conduct endangering public health" and for "gross immorality, or employing, assisting or enabling in any manner an unlicensed person to practice pharmacy." The Minnesota Uniform Narcotic Act was amended to require a prescription for the sale of narcotic drugs or mixtures containing them (i.e., paregoric, brown mixture) except codeine, and the amount of exempt codeine preparations which can be sold without a prescription was increased to 6 fluidounces.

**University of Mississippi, School of Pharmacy.**—Dr. R. P. Walton, professor of pharmacology is attending the Graduate School of Medicine at the University of Chicago this summer.—Mr. F. A. Anderson, assistant in chemistry, is pursuing graduate work in the Horace H. Rackham School of Graduate Studies at Michigan. Dean E. L. Hammond is in the Graduate School of the University of Wisconsin.—James A. Richardson, instructor in pharmacy, is working in a retail pharmacy during the vacation period.

**University of Montana, School of Pharmacy.**—Dr. John F. Suchy has been elected president of the Montana Section of the American Chemical Society.

**University of Nebraska, College of Pharmacy.**—Dr. Paul Jannke has received a grant of \$50 from the Nebraska Academy of Science (affiliated with the American Association for the Advancement of Science) to defray a part of the expense involved in the study of medicaments currently employed in the obliteration of varicose veins.—Dr. Harald Holck has received a fourth grant of \$150 from the American Medical Association for continuing the study of the effect of sex upon drug action.—Lucille M. Mills, instructor in physiology and technician in the health service, is on leave until September 1942 doing graduate work with a major in pharmacognosy at the University of Washington. During the present summer she is taking courses at the Oceanographic Laboratories of the University of Washington at Friday Harbor.—Lewis D. Fink 1939, is doing graduate work in pharmacology and teaching in the summer session. He has been majoring in pharmacology at the University of Minnesota since graduation and will return there in September.—Dr. J. B. Burt has been elected president of the Nebraska Chapter of Sigma Xi.—James R. Weeks and Howard Jensen have been elected to associate and Donald R. Mathieson to active membership in Sigma Xi. The Lehn and Fink medal was awarded to Howard P. Jensen. The Rasdal prize went to James R. Weeks and the Merck awards to James R. Fisher and Frank J. Hargitt.—Howard P. Jensen and James R. Weeks were graduated "With High Distinction." Donald R. Mathieson received the master's degree with pharmacology as a major.

**Ohio Northern University, College of Pharmacy.**—Prof. M. L. Neu-roth is spending the summer in various types of drug stores in order to make a first hand study of the activities in, and the demands made upon each type of store.—Dr. Myron Hanna has been called to active duty in the Army.—Dr. John A. Kramer, chief of the student health service, is giving a course in bacteriology and public health.

**Ohio State University, College of Pharmacy.**—Dr. Ole Gisvold has been elected to a position on the University Faculty Council.—He has also just released the first revision of his "Chemistry of Plant Constituents." The book has been enlarged by fifty pages.—A number of talks before lay-bodies and professional groups on such subjects as "What Our Professions Have in Common" and "Interesting Facts About Medicinal Plants" have done a great deal to show what pharmacy has to offer in other fields.—Prof. Charles W. Williams is doing graduate work at Purdue the present summer.—The third annual State Pharmaceutical Conference was held on April 2, with 76 pharmacists attending from 21 cities. The program consisted of lectures by the faculty and Mr. M. M. Ford of the Ohio Board of Pharmacy. Dr. Robert P. Fischelis was the guest speaker and his subject was "Tides in Pharmacy."—A human interest story is presented by the identical twins, Frank and Charles Bope. These brothers have made outstanding scholastic records while making their way through school at odd jobs. They obtained the 3.80 average, which entitles them to graduate with "summa cum laude" honors. They received the Merck awards. Frank will do post graduate work at Minnesota next year and Charles will work at the University of Wisconsin.—A student branch of the American Phar-

maceutical Association has recently been organized, 60 applications accompanied the request. The branch has already gone on record as willing to take the task of the organization of a regular meeting of all the branches in conjunction with the annual meeting of the American Pharmaceutical Association and the American Association of Colleges of Pharmacy.—The Epsilon chapter of Kappa Epsilon has been very active during the year in promoting social functions among the girls in the college of pharmacy.—The Rho Chi chapter has been conducting an educational program by its own members during the year. Papers on pharmaceutical subjects have been prepared by the members and read at afternoon meetings. The entire student body was invited to attend and the programs have created an interest among both members and students. Subjects discussed dealt with the poisonous and medicinal plants indigenous to Ohio, sodium cacodylate in the treatment of syphilis, and historical data on some of the important alkaloids. At one of the dinner meetings, Dr. Seymour of the department of physiology, discussed the subject of heredity in its relationship to pharmacy and medicine.—The new members initiated are; Robret T. Crawford, Albert Jacobs, Jean R. Leonard, John D. Marshall, Chana F. Peer, Anthony S. Ridolfo, Theodore Saferin and Dorothy Zangmaster.

**University of Oklahoma, School of Pharmacy.**—The Oklahoma University Pharmaceutical Association was addressed recently on the subject of stocking and merchandising syringes and needles by Harry K. Stueber of the Becton, Dickinson Company.—During the second semester a number of addresses were given by members of the faculty. The subjects discussed were—"Colchicine Treatment of Cultivated Plants" by Dr. O. J. Eigsti of the department of botany; "Phosphorus Compounds" by Prof. James Belcher of the department of chemistry; "The Future of Pharmacy" by Dean D. B. R. Johnson; and "A Healthy Religion" by J. Frederick Miller, secretary of the Y. M. C. A.—An exhibit by the pharmacy students featuring the "Activities at the Oklahoma University" was part of the annual convention and drug show of the Oklahoma Pharmaceutical Association at Oklahoma City in April.—Twenty-one students were granted the Bachelor's degree in pharmacy at the June commencement. The entire group have passed the board and are now registered in Oklahoma.

**Oregon State College, School of Pharmacy.**—Margaret Ann Wilson and George H. Swartsley were elected to membership in Phi Kappa Phi.—New members of Rho Chi are Doris Rae Estey, Marie A. Bosch, Margaret Ann Wilson, and Feung B. Lee.—The Lehn and Fink medal went to Robert Ludwig Johnson; the Women's Auxiliary of the Oregon State Pharmaceutical Association prize to Virginia Helen Pickens; and the award of the North Pacific Branch of the American Pharmaceutical Association went to George Herbert Swartsley.

**Philadelphia College of Pharmacy and Science.**—Dr. Lynwood F. Tice has been elected assistant dean of pharmacy and editor of the *American Journal of Pharmacy*, succeeding Dr. Ivor Griffith in the latter position.—Dr. Madeline O. Holland has been appointed librarian succeeding Mrs. Ada S. Capwell.—Dr. Ralph Pressman, after a leave of absence of a year at Edgewood Arsenal, will return this fall to his former place

in the department of bacteriology.—Much work is being done in connection with the use of surface tension depressants in accelerating the pace and extending the influence of bactericides.—The following prizes were awarded at commencement time: The Procter prize and the Frederick William Haussman Memorial prize to William Tillis Fink; the Frank Gibbs Ryan prize and the Women's Auxiliary of the Dauphin, Cumberland, Lebanon Counties Pharmaceutical Association prize to Sister Maria Aupperle; the William B. Webb Memorial prize and the Remington Memorial prize to Donald Edward Wenschhof; the Alumni Association medals to William T. Fink and William Allen Sieber; the Mahlon N. Kline Theoretical Pharmacy prize to William Spivack; the Alpha Sigma prize to William Allen Sieber; the Beta Sigma prize to Jane Lesley Weigandt; the Bacteriological prize to Thomas William Mou; the Merck awards to Donald Edward Wenschhof and William Spivack; the Women's Club of the Philadelphia College of Pharmacy prize to Milton Max Perloff; the Bachelor of Science in Chemistry-Bacteriology and Biology prize to Maxwell Gordon.—The commencement address was given by Dr. Reuben T. Shaw, past president of the National Education Association. His subject was "The Real Significance of Education."

**University of Pittsburgh, School of Pharmacy.**—The J. H. Beal Scholarship prize, the Faculty prize, the Mendelson prize and the Lehn and Fink medal were all awarded to David Perelman.

**Purdue University, College of Pharmacy.**—At the June commencement 26 received the Bachelor's, 2 the Master's, and 1 the Doctor's degree.—Mr. Robert E. Williamson, a reserve officer in the Medical Administrative Corps and a graduate assistant in pharmacy, was called to service in May.—Dr. Carl J. Klemme was appointed acting executive of the School of Pharmacy following the death of Dean Charles B. Jordan.—Dr. George L. Baker, Dean of the Toledo School of Pharmacy of the University of Toledo and Dr. C. L. Boswell have been elected to membership in the Purdue Chapter of Sigma Xi and Donald C. Brodie has been initiated as an associate member. Mr. Brodie was also elected to the Purdue Chapter of Phi Lambda Upsilon.—Prof. H. W. Heine, head of the extension department, and Dr. H. George DeKay, have been guest speakers at five annual meetings of the various dental societies of the state during the past year.—Dr. DeKay has been appointed chairman of the hospital pharmacy section of the Tri-State Hospital Assembly for the coming year.

**Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy.**—Dean Ernest Little has been appointed to the American Council on Pharmaceutical Education by President Kendig to fill the vacancy caused by the death of the late Dean Jordan.—Prof. George C. Schrick was the commencement speaker at the Rhode Island College of Pharmacy and Allied Sciences. He was awarded the degree of Doctor of Science on that occasion.

**Medical College of State of South Carolina, Department of Pharmacy.**—J. C. Aull, Jr., associate in chemistry and Dr. F. W. Kinard, associate in physiology have been promoted to the rank of assistant professorships



in their respective departments.—Prof. W. A. Prout read a paper at Columbia, South Carolina before the annual meeting of the State Academy of Sciences in April.—James R. Adams will be on leave the next academic year for graduate study at the University of Florida.

**South Dakota State College, Division of Pharmacy.**—Dr. Floyd J. LeBlanc, who has been acting dean since July 1940, has been appointed dean of the Division of Pharmacy, effective July 1, 1941. He received his undergraduate training and the Master's degree at South Dakota State College. He was awarded the Doctor of Philosophy by Purdue in 1938, having had a major in pharmaceutical chemistry and a minor in pharmacy. He has had five years of retail experience in pharmacy, serving a year and a half in the Army Medical Corps during the World War No. 1, and has published articles in the scientific and professional journals. He is a member of the South Dakota State Pharmaceutical Association, the American Pharmaceutical Association, Sigma Xi, Rho Chi, and the American Legion.—Jack Wert, 1941, has accepted an assistantship in pharmacy at Purdue where he will do advanced work. During the year Mr. Wert has been president of Tau Chapter of Rho Chi, a member of the Pharmaceutical Society, and of Blue Key, and vice president of the senior class. Guilford C. Gross, now an instructor in pharmacy, is attending the summer session of the graduate school of the University of Minnesota. He intends to continue his work, majoring in pharmacology.

**University of Tennessee, School of Pharmacy.**—The following awards for scholarship have been made: Levi E. Bungenheimer, Jr., the faculty medal; the Lehn and Fink medal, the Van-Vleet prize, the C. C. Jacobi prize to James O. Adams; The Women's Auxiliary of the Memphis Drug Club prize to Maurice E. Belew.—Changes in the faculty are as follows: W. W. Cox, instructor in chemistry resigned and will be replaced by Dr. H. A. Jeskey from the University of Wisconsin; Dr. Paul Smith, instructor in physiology, resigned, will be replaced by Dr. H. B. Barker from Cornell; Dr. O. S. Gibbs, professor of pharmacology will be replaced by Dr. A. P. Richardson from Stanford; Dr. Daniel Green, instructor in pharmacology, has been called to active service in the Army Officers Reserve Corps and is stationed at Jacksonville, Florida; and Dr. W. K. Stratman-Thomas, lecturer in public health, has accepted a commission as Lieutenant Commander in the Medical Corps of the Navy and is stationed at Trinidad.

**University of Texas, College of Pharmacy.**—Etta Mae Macdonald, who has been doing research on one phase of brucellosis, will do graduate work at the University of Wisconsin next year.

**Medical College of Virginia, School of Pharmacy.**—The total enrollment for the year 1940-41 was 135 with a graduating class of 29.—Prof. Tom D. Rowe, formerly assistant professor of pharmacy, who has been away on a year's leave of absence at the University of Wisconsin completing work on the Ph.D. degree, will return this fall to resume his duties as associate professor of pharmacy and acting head of the department. Mr. Rowe, it may be noted, has been working under an A.Ph.A. grant.—At the close of this year two students were elected



to Rho Chi, from the senior and from the junior classes respectively.—During the past year Dean Wortley F. Rudd was president of the Virginia Academy of science. The annual meeting was held at the College in May. Early in the spring he was elected president of the newly formed Southern Association for the Advancement of Science.—Mr. Eldon Roberts, chief pharmacist at the Medical College Hospital, who is in the Naval Reserve, has been called into active service. Dr. L. Kaufman has been named Acting Chief Pharmacist. Mr. R. H. Fiske will carry much of the routine work which Mr. Roberts had in the past. Four other pharmacists will be associated with him in the hospital pharmacy.

**State College of Washington, School of Pharmacy.**—The following students have been elected to the respective honorary societies during the year: Sigma Xi,—Virginia Gilliland; Phi Kappa Phi,—Virginia Gilliland, Stanley Berghoft, Joyce Johnson, and Louis Allen; Rho Chi,—Leo Sciuchatti, Robert Honodel, Lorraine LeMar, Clarence Helgeson, James Wilson, Josephine Demers, and James Wurtz; Phi Sigma,—Lorraine LeMar; Lambda Kappa Sigma, Constance Davis, Catherine Strasser, and Gertrude Simpson.—On May 31, Dr. Herbert L. Easlie discussed the subject of "Hormones and Personality" at the annual banquet of the student branch of the American Pharmaceutical Association.—Prof. Haakon Bang is on leave until the end of the first semester of next year to continue graduate studies at Purdue. Miss Virginia Gilliland will carry his school work during his absence.—The school was host to the Washington State Pharmaceutical Association which was held at Pullman in June.—During the year a Kappa Psi Alumni Association was organized.—Within the last two years six graduates have found employment in the drug stores of Alaska.—Russell R. Freu, a former instructor in pharmacy, has been ordered to the Navy as Chief Pharmacist's Mate and will be stationed at Brooklyn.—Mr. Charles F. Martin has accepted a graduate assistantship in the School of Pharmacy of the University of Buffalo.

**University of Washington, College of Pharmacy.**—Seven Master's degrees and two Doctors of Philosophy were awarded during the year.—New active members of Sigma Xi are Arthur Steers, Bernardo Acena, Helen Kipple, Orville Miller, and Paul Squier. Associate members are Charles Petty, Alice Codling, Franklin Fox, Robert Goldworthy, and Lawrence Penny.—Rho Chi initiates are Ray Bice, Bryan Honkawa, James Hicks, Jr., Henry Verhulst, Audrey Clarkson, Ted Ford, Kazuo Kimura, Mika Hayano, Kenneth Jenkins, Richard Jones, Haruo Kumakura, Calvin Lantz, Phillip Manson, J. Robert Richey, and Leslie Paul.—Teaching Fellowships went to Franklin Fox, Frederick Hurd, and Orville Miller.—Awards and scholarships were as follows—McKesson-Robbins Drug Co., scholarship,—Richard Peyton Jones,—Women's Auxiliary of Washington State Pharmaceutical Association,—Dorothy Pemberton, Elvina Spangler, Clarence Hollinsworth, and Howard Bates.—Lehn and Fink medal,—Charles Petty.—Rho Chi Society prize,—Kiyo Fujii.—Linton Memorial award,—Fred Hurd.—National Formulary Research Fellowship,—Bart Proper.

**Western Reserve University, School of Pharmacy.**—Dr. Malcolm Trupp, a graduate of the University of Washington, has accepted a position in the department of pharmacy effective next September.—Dr. Edward D. Davy, who was named acting dean following the transfer of Dean Spease to Chicago, was appointed dean to be effective July 1, 1941.—A. Dean Friesner has been appointed intern in pharmacy in the University Hospitals for the coming year.—Dr. George H. Gerlach, who has just finished his degree with a major in pharmacognosy, has accepted a research position with the Vick Chemical Company.—Kenneth W. McCrea, Merse M. Pike, and Myron McKinney have received the Master's degrees and the latter has accepted a position in the pharmaceutical department of Eli Lilly and Company.—The following new members have been elected to Rho Chi,—John W. Boenick, Frank E. Digangi, A. Dean Friesner, Seymore Marcks, Isadore M. Rudolph, Julius A. Gerlach, Jr., Arthur Roth, and Sister Mary Rita.—Because of high scholarship, tuition rewards have been issued to Julius A. Gerlach, Jr., Arthur Roth, Julius Appel, and Bernard H. Guthrie.—Merck awards went to Ernest Becker and A. Dean Friesner.

**University of Wisconsin, School of Pharmacy.**—During the academic year the following students in pharmacy were elected to honorary societies: to Rho Chi,—Beryl D. Averbok, Hugo E. Hessman, Jack E. Orr, Karl R. Schauermann, Joseph V. Swintosky, Julius J. Werner, Larua M. Williamsen, and Roger E. Wrede; to Phi Lambda Upsilon,—Austin A. Dodge, Lester A. Feiertag, and Joseph V. Swintosky.—Austin A. Dodge completed the requirements for the Doctor's degree in June. His research was under the direction of Dr. Edward Kremers.

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The appointment of Dr. Glenn L. Jenkins, Professor and head of the Department of Pharmaceutical Chemistry at the University of Minnesota, to the position of Dean of the School of Pharmacy of Purdue University was announced on July 19.

According to an announcement released by President E. C. Elliott of Purdue University on July 16, Dr. Carl J. Klemme, Professor of Pharmaceutical Chemistry and serving as acting executive of the School of Pharmacy since the death of Dean C. B. Jordan in April, has resigned to accept an appointment as administrator of the Experimental Research Laboratories of Borroughs-Wellcome & Co., Inc., Tuckahoe, New York, where he will assume his new duties on Sept. 2.

The appointment of Mr. Howard Hopkins as Dean of the College of Pharmacy of Ferris Institute, Big Rapids, Michigan, has just been announced. Mr. Hopkins received the Bachelor degree from Purdue University in 1938, and completed the requirements for the degree of Master of Science at the University of Nebraska in 1940. During the past year he has been engaged in graduate work at Purdue University.

## Miscellaneous Items of Interest

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### Memorials

#### **EDGAR ALBERT BURNETT**

On the afternoon of the twenty-eighth of June, Edgar Albert Burnett, Chancellor Emeritus of the University of Nebraska resigned his earthly stewardship after having given more than forty years of devoted service to the University and the state. Dr. Burnett was born at Hartland, Michigan, October 17, 1865 and passed his boyhood days on the farm that his pioneering father had wrested by the hardest kind of labor from the native Michigan forests. The parents believed in education and made it possible for the son to go to college. He graduated from the Michigan Agricultural College in 1887. Here also following his graduation he began his career as a teacher and investigator. In 1896 he became professor of animal husbandry at the South Dakota State College at Brookings. While there he married Nellie E. Folsom of the State College faculty. To them was born a son, Knox Folsom. Both the wife and son survive him. In 1899 he was called to the chair of animal husbandry at the University of Nebraska and began his long career as an investigator, teacher, and administrator. He was associate dean in charge of agricultural extension from 1899 to 1907 and became dean of the College of Agriculture at the time of its organization in 1909, and served in that capacity until he became Chancellor of the University in 1928. During his term of service as dean of the College of Agriculture he brought that institution to a leading position among institutions of its kind and made it the best known college in the University. Through all these years, his was a guiding hand in the agricultural development of the great plains country. Upon him were bestowed honorary degrees. He was elected to honorary scholastic and scientific societies and held membership in many civic clubs. He became a director of the Federal Land Bank (Omaha). Following the World War number I, he went to France as a member of the American Educational Corps, A.E.F., University of Beaune. He was president of the Association of Land Grant Colleges in 1925-26 and president of the National Association of State Universities in 1936-37. When he became Chancellor of the University of Nebraska, fear was expressed that because of his interest in agriculture, the other nine colleges might not receive the attention they deserved in a well rounded educational institution. But this was just what did not happen. He gave the needs of each of these colleges the same careful study and the same moral and financial support that he had given to the upbuilding of the college of agriculture when it only was his specific charge. During his administration in the midst of long periods of drouth and new deal confusion and with no new deal help he found a way to maintain the academic standing of the institution. At a time when the financial stress was greatest and the reserves carried by the University for emergencies

were practically gone, he found a way to spend several thousand dollars to increase the teaching and research staff of the college of pharmacy. And then, he himself, went out and obtained a thousand dollars from some business men in the city of Lincoln, so that certain researches on the standardization of drugs being carried on in the college of pharmacy might not be interfered with. He always found money to do the worth while things and he knew what the worth while things were and he followed the researches on digitalis with the same interest that he followed the experiments in grain hybridization. During his administration occurred the completion of Morrill Hall which houses some of the world's most famous paleontological collections; he sponsored the building of the Student Union, he was the father of the dormitory system and the creator of the University Foundation which has as its function the cultivation of the spirit of giving and the obtaining of resources for University activities beyond that which is possible for the taxpayer to support. The crowning effort of his work in this field was the obtaining from a friend the sum of \$800,000 for a library building which is now under construction. His monument, eternal, however, will be the influence of his wholesome, deeply religious life upon thousands of Nebraska boys and girls and men and women whose lives have been enriched because Edgar Albert Burnett became a Nebraskan.

Rufus A. Lyman.

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### FREDERICK WILLIAM NISH

On May 21, 1941 Frederick W. Nish, Emeritus Professor of Pharmacy of the University of California, College of Pharmacy, died following a brief illness.

Professor Nish was born January 14, 1871 in San Bernardino, California where he received his elementary and high school education. Following graduation from high school he attended the Los Angeles Teachers' College to qualify for teaching in the secondary schools. He then returned to San Bernardino where he spent two years teaching in the elementary schools before matriculating in the California College of Pharmacy which was at that time affiliated with the University of California. In 1901 Professor Nish received the degree, Graduate in Pharmacy, and because of the high regard and esteem held for him by the faculty was immediately appointed as instructor in pharmacy. In 1906 he was awarded the degree of Bachelor of Pharmacy. Three years later he was advanced to the rank of assistant professor and in 1909 became a full professor, serving in this capacity until 1938, when he retired and became Professor of Pharmacy, Emeritus. He was a student and great admirer of William Searby who at the time of his matriculation was professor of pharmacy and dean of the college.

Professor Nish made many contributions in the fields of educational and professional pharmacy. His writings give evidence of his excellent judgment and scholarly character. The following quotation from the introduction of a paper entitled *Comments on the Ninth Revision of the Pharmacopoeia*, reveals a bit of his character as I knew him. He writes as follows:

*"This paper is not intended, in any sense of the word, to be a criticism on the ninth revision of the pharmacopoeia; because such a task is far beyond the ability of its humble writer; besides the present revision of the pharmacopoeia is a work so thoroughly scientific and so comprehensive in its scope that it merits the commendation of our profession rather than adverse criticism from any one of us.*

*"A friendly discussion of the salient features of the book, which is so indispensable in the pursuit of our profession, may be of interest and of benefit to us all. It is to such an end that this paper is here submitted."*

Professor Nish was an excellent teacher. His subjects were presented in an orderly and systematic manner and were well balanced with respect to the theory and practice of pharmacy. The college of pharmacy and teaching were his sole interests and he unselfishly devoted his time and energy to the improvement of both. His kindly, pleasant manner and considerate good advice earned for him the respect of all his students and his many friends. In 1935 a testimonial banquet was given for him at which approximately one hundred and fifty of his former students attended, many of whom had graduated prior to 1910.

Professor Nish served as secretary to the California Pharmaceutical Society from 1906 to 1912 and was a member of the United States Pharmacopœial Convention in 1930. He was the past master of Occidental Lodge No. 22 A. F. and A. M. of San Francisco and had other Masonic affiliations. He was a member of Phi Delta Chi fraternity and an honorary member of Sigma Kappa Theta. He also held membership in other professional organizations.

He is survived by one sister, Mrs. Isabelle Poole of San Bernardino, California.

With the passing of Professor Nish pharmacy loses one of its devoted and eminent teachers.

T. C. Daniels.

### CHARLES BERNARD JORDAN

The following brief quotation from George Bernard Shaw, "Life is no brief candle to me. It is a sort of splendid torch which I have got hold of for the moment, and I want to make it burn as brightly as possible before handing it on to future generations," very aptly portrays the philosophy of Dean Charles B. Jordan, whose life we memorialize at this time. He was stricken with a heart attack in Chicago, April 15, shortly after his address before the Chicago Branch of the American Pharmaceutical Association. His death, April 22, at the Presbyterian Hospital in Chicago brought to an end an illustrious career in the profession of pharmacy.

Dean Jordan was born on a farm near Morrice, Michigan, November 7, 1878, where he received his elementary and high school training. The character of the man is well illustrated by the fact that he walked daily to high school, two and a half miles from home and, in addition, did his share of the chores about the farm.

Following graduation from high school he taught in the country

schools near Morrice and later in the grades of his home town. In 1904, he was graduated from the State Teachers' College at Ypsilanti with a life teaching certificate. During the following four years he was superintendent of the Morrice schools. Meanwhile he became interested in the profession of pharmacy, while serving an apprenticeship to a local druggist, and entered the University of Michigan College of Pharmacy, from which he was graduated in 1910 with the degrees of Pharmaceutical Chemist and Bachelor of Science. Two years later he received the degree of Master of Science.

Dean Jordan came to Purdue in 1910 as Head of the Department of Pharmacy and Professor of Pharmaceutical Chemistry. The Department of Pharmacy prospered under his leadership and was made a School in 1924 with him as its Dean. The School of Pharmacy improved its curriculum from the minimum two-year course to three years and finally to four years in 1930. The Graduate work has been developed, and attracts students in pharmacy from many states and countries. He was instrumental in starting the Purdue Pharmacist in 1924, one of the first student journals of pharmacy in the United States. The School occupied its new building in 1930. The pharmacy extension service was established in the same year. The Annual Druggists' Business Conference, now a fixed institution, was begun in 1931. In 1940 the annual Drug Clerks' Short Course was inaugurated for apprentices and pharmacists offering a week's training at the University. All of these activities are distinct professional services to druggists of Indiana.

Dean Jordan's influence for the betterment of the pharmaceutical profession extended far beyond the Purdue campus and the state. He was active in the affairs of the American Pharmaceutical Association, being a member since 1909. He served this organization in many ways as chairman of important committees. He reported papers annually before the Scientific Section and the Section on Education and Legislation. He served the latter as its secretary in 1916-17 and chairman in 1917-18. He was chairman of the House of Delegates of the American Pharmaceutical Association in 1929-30. At the time of his death he was chairman of the Committee on Professional Relations, a member of the Council, and of the Committee on Laboratory, all of which have to do with directing the work and shaping the policies of the Association.

He was also very active in the American Association of Colleges of Pharmacy, serving as its president in 1918-19, and chairman of its Executive Committee for thirteen years, in which position he was called upon to decide many momentous questions pertinent to the rapidly advancing educational standards in American pharmacy. He was a member of the American Council on Pharmaceutical Education, the only official national standardizing and accrediting agency in the field of pharmaceutical education in this country.

He served as a member of the Committee of Revision of the United States Pharmacopœia from 1920 to the time of his passing. He was chairman of the Sub-committee on Proximate Assays since 1930, and successfully carried on this part of the Pharmacopœial revision work.

Dean Jordan held membership in the American Pharmaceutical Association, Indiana Pharmaceutical Association, American Chemical Society, the American Association for the Advancement of Science, and the Indiana Academy of Science. He was a member of Phi Lambda



Upsilon, Rho Chi, Phi Kappa, Sigma Xi, and Scabbard and Blade. He was chairman of the Indiana Inter-professional Health Council, which he was influential in organizing. His name appears in *Who's Who*, *American Men of Science*, and *Leaders in Education*.

He was very active in the affairs of his community and was at one time president of the West Lafayette Boy Scouts Dads' Club, member and adviser of the Newman Club, an honorary member of the Tippecanoe County Medical Society, member of the Town and Gown Club, the Fortnightly Club, the West Lafayette Country Club, and served as vice-president of the Lafayette Rotary Club and a member of its board of directors during the past year. He was a member of St. Mary's Church and the Holy Name Society.

He served as instructor in St. Elizabeth Hospital School of Nursing and for the past two years was president of the Nursing School Board of that institution.

As a teacher Dean Jordan was highly esteemed and respected by his pupils. His fairness and keen sense of humor in the class room elicited response from those under his tutelage. In his capacity as an administrator he inspired loyalty in those associated with him.

He was the author of a text entitled "Qualitative Analysis for Students of Pharmacy and Medicine." For a number of years he edited the American Association of Colleges of Pharmacy Section which occurred monthly in the Journal of the American Pharmaceutical Association. He has many scientific papers to his credit upon the subjects of drug assay, pharmaceutical education, and professional pharmacy.

His outstanding work as a scientist and educator brought him the honorary degree of Doctor of Science in 1933 by the Ohio Northern University and in 1940 by Rutgers University.

Charles Bernard Jordan was united in marriage to Helen Mary Byrnes of Laingsburg, Michigan, August 20, 1907. As husband and father he was always thoughtful of his family and made it a happy one. He is survived by Mrs. Jordan and four children, Mrs. Veronica Ricks of Lafayette; Lieut. Robert Jordan, instructor at the Culver Military Academy; Charles Jordan, associate director of Professional Relations at the University of Florida; and Mildred Jordan, student at St. Mary's College, Notre Dame, Indiana.

So much that has been said is merely a record of facts about the life of one whom we seek to honor. In so doing we have not pictured well those qualities of character which distinguished his unbounded enthusiasm and fine sense of humor. He seemed always to be glad of life because it gave him a chance to work and to play and enjoy his friends and loved ones. He cultivated neighborliness and gave much time to the promotion of friendships. He was straightforward, tolerant, and kind but had no patience with falsehood and meanness. These and many other social qualities were his guide-posts along the way of life.

Dean Jordan was laid to rest in St. Mary's Cemetery, Lafayette, April 25, 1941.

The Jordan Memorial Committee—C. A. Behrens, C. S. Doan, H. E. Enders, M. L. Fisher, C. J. Zufall, C. O. Lee.

**EDWARD KREMERS**

On July 9, 1941, Dr. Edward Kremers, Director Emeritus of the School of Pharmacy of the University of Wisconsin, died of a heart attack after having undergone some operations with good success. He was 76 years of age.

Born at Milwaukee, Wisconsin on February 23, 1865 as one of the sons of Gerhard and Elise Kremers, née Kamper, Edward Kremers served his pharmaceutical apprenticeship with the excellent German pharmacist Louis Lotz at Milwaukee. This man who had been a student with Liebig at Munich imbued his apprentice with an idea which Kremers never abandoned and fought for all his life: the idea that pharmacy has to be a profession executed by scientifically educated people in order to really fulfill the tasks assigned to it within the service of public welfare.

In 1884 Kremers entered the Philadelphia College of Pharmacy, but for family reasons continued his study at the University of his home state, at Madison, Wisconsin. Here he earned his Ph.D. degree in 1886 and his B.S. in 1888. During his study at Madison, Mr. Kremers was fortunate in having as his teacher one of the greatest scientists American pharmacy has presented the world with: Dr. Frederick B. Power. Working with Power on the volatile oils of pennyroyal and citronella he learned of the classical investigations executed in the field of volatile oils in particular and of phytochemistry at large by the German chemist Otto Wallach.

Thus Mr. Kremers decided to continue his studies under the leadership of this master whom Flueckiger had designated the "Messiah of the terpenes." In the fall of 1888 he went abroad and became at Bonn a student in the laboratory of Wallach attending at the same time the lectures of Kekulé of benzene ring fame on structural chemistry. These two branches of chemistry, i.e. phytochemistry and structural chemistry have remained the two main fields of Mr. Kremers' scientific endeavor throughout his life and it was in them that he gained world wide recognition. When Wallach accepted a call to Goettingen, Mr. Kremers was one of the twelve students who migrated with their admired teacher to his new place of work. It is a remarkable proof of the knowledge acquired by Mr. Kremers previous to his study in Europe as well as of his talents and his industry that after scarcely two years of work with Wallach, in 1890, he was awarded the Ph.D. degree. His dissertation dealt with "The Isomerism within the Terpene Group" and laid the ground for many later investigations. Returning to Madison, Dr. Kremers was instructor in pharmacy from 1890-1892, professor of pharmaceutical chemistry and director of the Course in Pharmacy at the University of Wisconsin from 1892-1935.

The work done by Dr. Kremers as a pharmaceutical educator has not only presented American professional pharmacy with practical pharmacists equal to the best of their colleagues all over the world. It has also given to American industry and to governmental agencies scores of men able to do that special kind of research and of administration so urgently needed if the U. S. A. is to make the progress to which her wealth of resources in men and material entitle her.

Students of Dr. Kremers, imbued with his spirit and trained in his

way of observation and conclusion, are to be found wherever responsible work in teaching, in research, and in administration asks for men who not only use knowledge but in addition are given and able to employ vision. It is an experience made over and over again. Asked what they especially have learned from Dr. Kremers, every one of his former students hesitates to mention detail. All of them finally consider as the most precious gain of their study with him their being imbued with his particular kind of view and approach, taking the details not isolated but connected and regarding the finding out and the pointing out of the nature and of the importance of these connections as one of the highest objectives of research and knowledge.

Details could and can be learned at many places and from many people. However, there have always been only a very few places and a very few men at which and from whom American students of pharmacy could be sure to be introduced into that realm of synthetic thought which, being aim as well as method, forms a broad mind and makes a mere collector of scientific details a real scientist.

There is one dominant quality from which all achievements of an individual spring. With Dr. Kremers this quality was his high respect for human dignity based on his conviction that man as a thinking being is responsible to himself and to his fellowman and has to make the best of his opportunities to the benefit of all.

Being a pharmacist by choice and by destiny Dr. Kremers attempted to make pharmacy a profession standing on the same educational level as the other academic callings and to give the pharmacist and the service rendered by him the advantage of special knowledge as well as of a broad general horizon. That is the reason for the fact that already in 1902, scarcely having become warm on the chair of the director of the Wisconsin University Course in Pharmacy, Dr. Kremers introduced the first four year course in pharmacy in America, fully aware of the prospect of being ridiculed first and becoming imitated later. That he likewise was the first to establish graduate work for students of pharmacy in America leading to the Ph.D. with pharmacy as a major is a logical sequence as well as a psychological consequence. Finally it was Dr. Kremers who in 1913 initiated the first "Pharmaceutical Experimental Station" in the United States, thus demonstrating the possibilities and usefulness of academic pharmaceutical research.

A man like Dr. Kremers must be historically minded. Forced by his nature to trace things and events back to their place and reason of origin, he becomes a historian whether he likes it or not. Dr. Kremers liked, even loved history and it was this love that made him an ardent fighter for the teaching of the history of pharmacy in particular as well as of science in general as a means of humanizing the technical sciences and professions and those practicing them.

It was Dr. Kremers who initiated the organization of a Historical Section of the A.Ph.A., founded in 1902, and created in that way an organized pharmaceutico-historical movement on American soil. It is likewise very probable that the courses in history of pharmacy as well as of chemistry announced by him for the first time in the 1907-1908 catalogue of the University of Wisconsin, were the first of their kind to be held as recognized subjects of instruction at an American

university or college. The teacher of the history of pharmacy became of necessity a collector of historical material. In fifty years of collecting Dr. Kremers brought together books, pamphlets, illustrations, clippings, notes etc., of historico-pharmaceutical meaning touching every possible aspect of pharmacy.

Ideas have to become known in order to become effective. Dr. Kremers recognized that very well. The number of his addresses and papers on educational subjects and with inspirational tendency is very great. Finally he became an editor himself. From 1896 to 1909 he edited, first together with Frederick Hoffmann and from 1901 alone, the *Pharmaceutical Review*. There is scarcely one copy of this journal without some contribution of the editor fighting for progress, for better education, for more endeavor towards better pharmacy. It was in 1898 that Dr. Kremers created another journal, the *Pharmaceutical Archives*, restricted exclusively to the publication of scientific originals. This journal was discontinued in 1903 and revived in 1936.

However, Dr. Kremers edited not only journals and wrote articles on educational subjects. He was one of the authors of the *National Standard Dispensatory* and the comprehensive work *The Volatile Oils*, a product of the cooperation of Gildemeister-Hoffmann-Kremers has been published in two editions (1900 and 1913). The pharmaceutico-historical collections of Dr. Kremers have formed the main basis for the *Kremers-Urdang History of Pharmacy* published in 1940, the first book containing a systematic survey on the development of American pharmacy.

Dr. Kremers has never denied himself for work, although sometimes for honors. He served the United States Pharmacopœia committee as chairman of the Committee on Volatile Oils and related subjects from 1900 to 1910 and the American Pharmaceutical Association as chairman of the Scientific Section and as Historian. He refused the suggestion to become president of the American Pharmaceutical Association, but was made its honorary president for 1933-1934. He was president of the American Conference of Pharmaceutical Faculties in 1902, and of the Wisconsin Pharmaceutical Association in 1930. After his resignation as director of the School of Pharmacy at Wisconsin he became a member of the Wisconsin State Board of Pharmacy and the National Association of Boards of Pharmacy made him an honorary president for 1939-1940. He was furthermore an honorary member of the *Société d'Histoire de la Pharmacie*, of the *Gesellschaft fuer Geschichte der Pharmazie*, and of the *Deutsche Pharmazeutische Gesellschaft*. He was awarded the Ebert Prize twice, in 1887 and in 1900, and received the Remington Honor Medal in 1930. Finally the American Institute of the History of Pharmacy, founded in 1941 on the initiative of Dr. A. H. Uhl in the spirit of Dr. Kremers and as an attempt to perpetuate the work and the ideals of this pioneer of the history of pharmacy, made him its honorary president on its initial meeting. There is still work to be done which will shed even more light on the scientific achievements for which we are indebted to Dr. Kremers: The combining of the essentials of his numerous publications on phytochemistry and on structural chemistry systematically arranged in book form. Shortly before his death he began one part of

this task himself. For another one he secured the assistance of a former student of his, Dr. Lloyd M. Parks, now assistant professor at the University of Wisconsin School of Pharmacy. It can well be assumed that Dr. Parks will finish the work to the satisfaction of all concerned. The principal importance of the work done by Dr. Kremers in the field of structural chemistry has not yet found the appreciation which it deserves. His classical pamphlet on *The Classification of Carbon Compounds* will perhaps be given more attention when the book Dr. Parks is now working on shows the bearing of the ideas of Dr. Kremers on inorganic chemistry.

The picture of the deceased would not be complete without a short glance at his private life. This was characterized by a genuine readiness to help wherever and whenever an opportunity offered itself. It was furthermore, a model of harmony. On July 6, 1892 Edward Kremers married Miss Laura Haase, like him of German descent, and born at Milwaukee. No one who has had the fortune to enjoy the company of this couple, to get a taste of their hospitality, to sense the genuine kindness of their hearts, will ever forget them. Of their children, three, two daughters and one son are living, the son, Roland E. Kremers, a well known research chemist, is employed by the General Foods Corporation, Hoboken, New Jersey.

A man of highest merit and of rare human qualities has left this world. His tasks have remained and are waiting for new workers to shoulder them. We cannot do anything better in his memory than to follow his way to the utmost of our ability.

George Urdang,

The American Institute of the History of Pharmacy,  
Madison, Wisconsin.

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## Program of the American Association of Colleges of Pharmacy\*

### Forty-Second Annual Meeting

President, H. Evert Kendig; Vice President, Eugene O. Leonard; Secretary-Treasurer, Zada M. Cooper; Chairman of the Executive Committee, Ernest Little.

#### SUNDAY, AUGUST 17

8:00 P. M. Meeting of the Executive Committee.

#### MONDAY, AUGUST 18

9:00 A. M. Meeting of the Executive Committee.

9:30 A. M. Conferences of Teachers.

1:30 P. M. First Session—Business.

6:00 P. M. Annual Dinner.

8:00 P. M. Second Session—Business.

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\*Hotel Statler, Detroit, Michigan, August 17 to 19, 1941.

## TUESDAY, AUGUST 19

- 9:30 A. M. Joint Session of the American Pharmaceutical Association, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy.
- 2:00 P. M. Third Session—Business.

## Sessions of the Association

## FIRST SESSION, MONDAY, AUGUST 18, 1:30 P. M.

1. Roll Call.
2. Appointment of Committee on Resolutions.
3. Appointment of Nominating Committee.
4. Appointment of Auditing Committee.
5. Address of the President, H. Evert Kendig.
6. Report of the Secretary-Treasurer, Zada M. Cooper.
7. Report of the Executive Committee, Ernest Little.
8. Reports of Standing Committees:
  - (1) Committee on Educational and Membership Standards, Charles H. Rogers.
  - (2) Committee on Curriculum and Teaching Methods, George L. Webster.
  - (3) Committee on Activities for Alumni, George W. Hargreaves.
  - (4) Delegates to the American Council on Education, B. Olive Cole.
  - (5) Committee on Relation of Boards and Colleges, Howard C. Newton.
  - (6) Committee on Libraries, Charles O. Lee.
  - (7) Committee on Problems and Plans, Rufus A. Lyman.

## MONDAY, AUGUST 18, 6:00 P. M.

Joint Annual Dinner with National Association of Boards of Pharmacy.  
Address, Medical and Pharmaceutical Cooperation, Dr. Morris Fishbein.

## SECOND SESSION, MONDAY, AUGUST 18, 8:00 P. M.

1. Address, Dr. F. J. Brown, Consultant, American Council on Education.
2. Address, Work of the Committee of the National Drug Trade Conference, Relative to Endowments for Colleges, Ernest Little.
3. Paper, A Junior American Pharmaceutical Association, B. V. Christensen.
4. Report of the Editor of the American Journal of Pharmaceutical Education, Rufus A. Lyman.
5. Presentation of Recommendations from the Conferences of Teachers.

## THIRD SESSION, TUESDAY, AUGUST 19, 2:00 P. M.

1. Reports of Special Committees:
  - (1) Committee on Predictive and Achievement Tests, Carl J. Klemme.
  - (2) Committee on Informative Literature, B. V. Christensen.
2. Reports of Special Representatives:
  - (1) Druggists Research Bureau, Paul C. Olsen.
  - (2) National Wholesale Druggists Association, Robert C. Wilson.



3. Report of Committee on Resolutions.
4. Report of the Auditing Committee.
5. Miscellaneous Business.
6. Election of Officers.
7. New Business.
8. Executive Session.

### Joint Session of the American Pharmaceutical Association, American Association of Colleges of Pharmacy and National Association of Boards of Pharmacy

TUESDAY, AUGUST 19, 9:30 A. M.

1. Reports of Committees:
  - (1) Fairchild Scholarship, E. G. Eberle.
  - (2) Pharmaceutical Syllabus, Henry M. Burlage.
  - (3) Status of Pharmacists in the Government Service, H. Evert Kendig.
  - (4) Modernization of Pharmacy Laws, Robert L. Swain.
2. Address, Distributive Education, B. Frank Kyker, Chief, Business Education Service, United States Office of Education.
3. Report for the American Council on Pharmaceutical Education, A. G. DuMez.
4. Reports of Committees, continued.
  - (5) Personnel Problems, Joseph B. Burt.
  - (6) Professional Relations:
    - (a) College Activities, George C. Schicks.
    - (b) State Activities.
  - (7) Dental Pharmacy, George C. Schicks.

### Conference of Teachers of Pharmacy

Chairman, Clark T. Eidsmoe; Secretary, R. A. Kuever.

MONDAY, AUGUST 18, 9:30 A. M.

Topic—"Courses in Pharmacy for First Year Students."

Paper: J. F. McCloskey.

Discussion: E. L. Cataline, William J. Husa, David W. O'Day.

Paper: Charles V. Netz.

Discussion: C. L. Cox, Harry W. Mantz, R. E. Terry.

Paper: Leon A. Thompson.

Discussion: Earl P. Guth, James W. Jones, C. O. Lee.

Topic—Report, Long Range Program Committee—W. A. Jarrett.

### Conference of Teachers of Chemistry

Chairman, F. Scott Bukey; Vice Chairman, George W. Hargreaves;  
Secretary, Lloyd M. Parks.

MONDAY, AUGUST 18, 9:30 A. M.

*Symposium on Organic Pharmaceutical Chemistry*

1. "Should Separate Courses be Given in Organic Chemistry and Organic Pharmaceutical Chemistry?" E. V. Lynn.
2. "Teaching Organic Pharmaceutical Chemistry," Loyd E. Harris.
3. "A Course in the Chemistry of Organic Medicinal Products," Walter H. Hartung.
4. "Laboratory Work in a Course in the Chemistry of Organic Medicinal Products," W. Taylor Sumerford.

*Other Papers*

5. "Chemistry's Debt to Pharmacy," Arthur E. James.
6. "Correlation of the Teaching of Dispensing Pharmacy and Quantitative Analysis," Edgar A. Kelly and Elmer M. Plein.

**Conference of Teachers of Pharmacognosy and Pharmacology**

Chairman, J. Allen Reese; Vice Chairman, A. John Schwarz; Secretary, Robert L. McMurray.

MONDAY, AUGUST 18, 9:30 A. M.

1. "Sound Films," James E. Dille.
2. "The Training of a Pharmacognosist," Heber W. Youngken.
3. "What Classification Should be Used in Presenting a Course in Pharmacognosy?" Maynard W. Quimby.
4. "Preparing the Pharmacy Student for Research in Pharmacology and Bioassay," Harald G. O. Holck.
5. "Growing Cascara on Uncultivated Logged-off Land," Forest J. Goodrich.
6. "Recommended Training for a Pharmacognosist," L. David Hiner.
7. "The Use of Kodachrome 2" x 2" Slides as an Economy in the Visual Teaching of Pharmacology," C. C. Pfeiffer.
8. "A Course in Pharmacognosy," L. G. Gramling.
9. "An Interesting and Effective Method of Demonstrating the Action of Drugs on the Intestines," Howard L. Reed.
10. "Indestructible Garden Labels," Edwin L. Newcomb.
11. "Should Endocrine Products Be Included in the Pharmacognosy Course or Considered in a Separate Course?" Marin S. Dunn.
12. "A Practical Method for Multiple Distribution of Direct Current and Time Impulses in the Laboratory," L. W. Hazleton.

**Conference of Teachers of Pharmaceutical Economics**

Chairman, John V. Connor; Secretary, Lawrence F. Ferring.

MONDAY, AUGUST 18, 9:30 A. M.

1. "Personnel, Lighting and the Proper Location of Articles," D. B. R. Johnson.
2. "How Efficient Is Secondary School Training in Arithmetic?" Lloyd L. Boughton.
3. "Business Analysis for the Successful Pharmacist," George Seferovich.

4. Report of the Committee on Pharmacy Economics Syllabus, C. Leonard O'Connell.
  5. Panel Discussion on the Proposed Syllabus of Pharmacy Economics, John F. McCloskey; Discussion Leader, C. M. Brown.
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## Plant Science Seminar Program, Cranbrook, Bloomfield Hills, Michigan

**Monday, August 11.** Morning: Arrival; Registration at the Cranbrook School Office; 'Get Acquainted.'

2:00 P. M. Call to order of the 19th Annual Plant Science Seminar by Chairman, John E. Seybert. Address of Welcome, Dr. Robert T. Hatt, Director of the Cranbrook Institute of Science.

Announcements; Appointments of Committees.

3:30 P. M. Tour of Cranbrook Grounds including the Booth Gardens.

8:00 P. M. Illustrated Talk on the Flora of the Region, Mrs. Bingham.

**Tuesday, August 12.**

9:00 A. M. Field Trip, with box lunch at noon, and continuation of trip in the afternoon, in joint session with the Michigan Wildflower Association. Mrs. Marjorie T. Bingham, Director.

8:00 P. M. Activities of the State Conservation Department (Illustrated) by Mr. Norman F. Smith, followed by a report on the Medicinal Plant Survey of Michigan, by Professor E. N. Gathercoal.

**Wednesday, August 13.**

9:00 A. M. Leave Cranbrook arriving in Ann Arbor by 10:00 A. M.

10:00 A. M. Tour of the University of Michigan, with luncheon at the Michigan League Building and tour of the Huron River Drive in the afternoon. Return to Cranbrook by 6:00 P. M.

8:00 P. M. Kodachromes of Alaska by Dr. Marin S. Dunn. Meeting of the Committee on Botany and Pharmacognosy of the National Research Council, Dr. Heber W. Youngken, Chairman.

**Thursday, August 14.**

8:30 A. M. Visit to the Ferry-Morse Seed Farm.

2:00 P. M. Papers: "Some Aspects of Cyto-genetics" and "Dichogamy and its role in Breeding," Dr. Wm. J. Bonisteel, Fordham Univ. "The Growth Effects of thiamin chloride, pyridine, piperidine and atropine sulfate on Stramonium Seedlings." Mr. Heber W. Youngken, Jr. Univ. of Minn. Roundtable discussions.

8:00 P. M. Address: "Our Native Orchids," by Mrs. Marjorie T. Bingham.

**Friday, August 15.**

- 9:00 A. M. Visit to Parkdale with box lunch at noon and field trip in the afternoon.
- 8:00 P. M. Final Business Meeting: Reports of Committees; Election of officers for the 20th Annual Plant Science Seminar. Movies of Past Seminars by Darbaker and Wirth.

**Saturday, August 16.** Trip to the Hartwick Pines. (Those desiring to make this trip should sign up at the time of Registration). This is the only remaining stand of virgin white pine in Michigan's lower peninsula and is located about 7 miles from Grayling. White, Norway and Jack Pine, Cedar, Balsam, Hemlock, Black and Norway Spruce; together with White Birch, Maple, Beech and Mountain Ash form a fine forest canopy for a great variety of wild flowers. No stand of timber in Michigan compares in size with the Hartwick Forest. It can be reached in four hours of comfortable driving from Cranbrook.

Meals will be served at 8:00 A. M.; 12:00 Noon, and 6:00 P. M. beginning Monday noon and ending Saturday morning with breakfast.

Since most Seminararians drive to the Seminar in their own cars this Program Schedule has been built on the assumption that those present will use their own cars for the local trips. There will, of course, be some vacant places in these cars.

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## Program of the First Seminar on the History of Pharmacy Arranged by the American Institute of the History of Pharmacy.

The Seminar will be held at the American Institute of the History of Pharmacy in Madison, Wisconsin, July 28 and 29, 1941. The general subject will be general ideas, methods, and aims of the teaching of the history of pharmacy.

**First Day.**

- 9:00 A. M. Opening Address:  
Dr. Arthur Uhl, President of the A. I. H. P.
- 9:30 A. M. Lecture: The Scope of the History of Pharmacy.  
Dr. George Urdang, Director of the A. I. H. P.
- 10:45 A. M. Lecture: Biographies as subject and Material of the History of Pharmacy.
- 2:00 P. M. Seminar: The Concept of the History of Pharmacy.
- 3:30 P. M. Lecture: Experience in Teaching History of Pharmacy.

**Second Day.**

- 9:00 A. M. Lecture: The Development of the Pharmaceutico-Historical Movement:  
Dr. George Urdang.
- 10:30 A. M. Lecture: Survey on Pharmaceutico-Historical Literature.

- ture: Dr. E. J. Ireland, Member of the Council of the A. I. H. P.
- 2:00 P. M. Lecture: Survey of the Pharmaceutical Journals:  
Dr. C. O. Lee, Member of the Council of the A. I. H. P.
- 3:30 P. M. Seminar: The Use of Pharmaceutico-Historical Literature and Journals as Means of Teaching.
- 7:30 P. M. Dinner.  
Closing address.

Every lecture is to be followed by a discussion. It is intended to mimeograph the lectures and the essentials of the discussion and the seminar debates in order to supply each student with material to be used for later study or employment in the teaching of the history of pharmacy.

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## Citations for Honorary Degrees, University of Maryland, 1941\*

HENRY ARMIT BROWN DUNNING  
Pharmaceutical Manufacturer, Baltimore, Maryland  
For the Honorary Degree of Doctor of Science

Mr. President: It is my honor and privilege to present to you for the honorary degree of Doctor of Science a distinguished and loyal Alumnus of the School of Pharmacy, who has rendered meritorious service to the State and Nation in advancing the standards of pharmaceutical education and pharmaceutical practice and in promoting scientific research, Doctor Henry Armit Brown Dunning.

Dr. Dunning was born in Denton, Maryland, and was educated in the public schools of that city. For his professional education, he attended the Maryland College of Pharmacy and Johns Hopkins Uni-

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\*It seems to the Editor that these citations are well worth publishing for they give the basis upon which honorary degrees may well be granted for achievement in the field of pharmaceutical endeavor. On this occasion the University of Maryland recognized the services of three men; one a manufacturer who has rendered an unusual service in the field of creative science and the support of pharmaceutical education; one, who has fostered every movement for the advancement of pharmaceutical education and legislation and has stood like a stone wall against those elements that lower the level of pharmaceutical service; and finally, and by no means of lesser importance, one who is a retail pharmacist, who through a long professional life has stood for those things which dignify the service of his profession. Not only are these men to be congratulated upon the honor which has come to them, the University of Maryland is to be congratulated upon placing honors where they are so well deserved.—Ed.

versity. He holds the degree of Graduate in Pharmacy and Doctor of Pharmacy from the Maryland College of Pharmacy for work done in course, the honorary degree of Master of Pharmacy from the Philadelphia College of Pharmacy and the honorary degree of Doctor of Science from Washington College. He is a past president of the Maryland Pharmaceutical Association and of the American Pharmaceutical Association, a trustee of the Maryland Academy of Science, First Vice President of the United States Pharmacopœial Convention and was the recipient of the Remington Honor Medal in 1925.

Dr. Dunning has made notable contributions to science, particularly, in the synthesis of chemicals and the purification of organ constituents for medicinal use. He has contributed liberally of his time, energy and wealth to promote study and research in chemistry and pharmacy and has been a wholesome influence in state and national pharmaceutical and scientific associations. He has also given freely of his time and wealth to such institutions as the Young Men's Christian Association and the Home for the Incurables of Baltimore.

Because of Dr. Dunning's outstanding contributions to pharmacy and science and because of his fine sense of the obligations of citizenship as manifested by his many philanthropic activities, it is believed that it is appropriate for the University of Maryland to confer upon him an honorary degree.

I, therefore, respectfully request that there be conferred upon him the degree of Doctor of Science, *honoris causa*.

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WORTLEY FULLER RUDD

Pharmacy Dean, Richmond, Virginia

For the Honorary Degree of Doctor of Science

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Mr. President: It is my honor and privilege to present to you for the honorary degree of Doctor of Science, an outstanding pharmaceutical educator and scientist, Dean Wortley Fuller Rudd of the School of Pharmacy of the Medical College of Virginia.

Dean Rudd is a native of the State of Virginia and was educated and trained largely within that state. He holds the degree of Bachelor of Arts from the University of Virginia, Bachelor of Philosophy from the Medical College of Virginia and Master of Arts from Columbia University. He has served as Professor of Chemistry in the Medical College of Virginia and as Dean of the School of Pharmacy of that institution, a position which he still holds. Among the other offices which he has held or still holds are president of the American Association of Colleges of Pharmacy, secretary of the Virginia Section of the American Chemical Society, president of the Virginia Academy of Science, President of the Southern Association for the Advancement of Science and co-editor of the Virginia Pharmacist.

Dean Rudd is an outstanding figure in American Pharmacy. He has been active in pharmaceutical, chemical, medical and other scientific organizations in the State of Virginia and the Nation for more than twenty-five years. He has done as much, if not more than any one person as a teacher, writer, editor and association worker to



advance the standards of pharmaceutical education, to elevate the practice of pharmacy and to enlist the support of pharmacists for the advancement of science in general.

In view of these worthy accomplishments and because of the excellent qualities of citizenship which he exemplifies, it seems particularly fitting at this time that the University of Maryland express its appreciation of Dean Rudd's services to pharmacy and science by conferring an honorary degree upon him.

I, therefore, respectfully request that there be conferred upon him the degree of Doctor of Science, *honoris causa*.

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ROBERT SENTMAN MCKINNEY

Practicing Pharmacist, Taneytown, Maryland  
For the Honorary Degree of Doctor of Pharmacy

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Mr. President: It is my honor and privilege to present to you for the honorary degree of Doctor of Pharmacy, a loyal Alumnus of the School, who has advanced the cause of pharmacy and the other health-service professions through his steadfast adherence to high ideals in the practice of pharmacy and through the honest and honorable relationships which he has consistently maintained with the public, Mr. Robert Sentman McKinney.

Mr. McKinney was born in Taneytown, Maryland, and was educated in his father's school and in the Maryland College of Pharmacy, from which he was graduated with the diploma of Graduate in Pharmacy in 1882. He has owned and operated a pharmacy in the place of his birth for more than fifty years, is a past president of the Maryland Pharmaceutical Association and a past honorary president of the Alumni Association of the School of Pharmacy.

Mr. McKinney is not only an outstanding pharmacist, but an exemplary citizen and a loyal Alumnus. It is believed, therefore, to be especially appropriate at this time for the University of Maryland to confer upon him an honorary degree in recognition of these attributes.

I, therefore, request that there be conferred upon him the degree of Doctor of Pharmacy, *honoris causa*.

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## The Ohio Society of Hospital Pharmacists

Attention is called to the program of the twenty-seventh annual meeting of the Ohio Hospital Association which was held at Columbus April 29-May 1. One of the affiliated associations is the Ohio Society of Hospital Pharmacists. The Society held a full day's program. Since the writer has been told by an officer of a hospital pharmacy group in the west that they were at a loss to know what to discuss at their monthly meetings, some of the titles of papers and subjects of discussion without mentioning the authors names may be helpful here. A selection is given as follows: Diagnostic reagents; The preparation of sterile solutions, Should the pharmacy be a self-sustaining or a service depart-

ment in the hospital? The hospital pharmacy should be an income department. What constitutes a special prescription for a hospital patient? The hospital pharmacy should not be an income department. The practicability of a pharmacy in a small institution; capital investment, inventory, and income. On special orders for patients should the policy be to dispense the original package? Should special medications purchased for a patient become the property of that patient? Is a list of standard medications a requisite if the pharmacy is an income department? Should the hospital pharmacy compete with the local retail pharmacies in filling patients' prescriptions? Should a uniform drug policy be adopted by the hospitals in a community outlining the medications to be included in the room rate? What, if any, medications may be sold to hospital employees without a prescription? It would look as if these topics presented problems for a number of monthly discussions for hospital groups and these are only a beginning. It is interesting to note that of the officers of this association and authors of papers at least eight of them had training in hospital pharmacy at Western Reserve University where Dean Edward Spease developed this type of instruction with great effectiveness. Perhaps this is an argument in favor of the whole field of pharmaceutical service would be better promoted if some schools would develop special trends in the undergraduate curriculum.

Rufus A. Lyman.

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## Internships in Pharmacy

### *The Johns Hopkins University*

The Johns Hopkins Hospital of Baltimore announces that internships in pharmacy will be open to two 1941 graduates of accredited schools of pharmacy. Those who wish to apply will be required to submit a statement giving full details as to age, nationality and preliminary and advanced education, together with a small photograph and a letter from the dean of the school, giving details as to the record achieved in the school of pharmacy and his estimate of the applicant's personality and fitness. Advice of the deans of the respective colleges will serve as a guide in selecting applicants.

These internships will be for a period of twelve (12) months, beginning on July 1, 1941. Maintenance during this period will be provided by the hospital. It will be necessary for internes to occupy quarters in or near the hospital as supplied. Off-duty hours must be so arranged that one pharmacist-interne will be on call when the hospital pharmacy is closed. An allowance of \$40.00 per month will be made for necessary outside expenses for each interne. Regulations regarding personal conduct and habits will be those established by the director of the hospital for internes on other hospital services.

Opportunity will be offered for well rounded practical experience in hospital manufacturing and dispensing procedures under capable supervision. Eight registered pharmacists are included in the full-time staff of the pharmacy department of this institution. All drug products and laboratory reagents used in the various clinics and out-patient

departments of the hospital are supplied through the hospital pharmacy. The facilities of the Welch Medical Library are available for pharmacists who may wish to continue study during internship.

Applications for appointment should be forwarded not later than May 15th. Appointments will be announced on or before June 15th. April 24, 1941.

Winford H. Smith, M. D., Director.

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## New Books

ORGANIC CHEMISTRY with Applications to Pharmacy and Medicine by Eldin V. Lynn, Ph. D., Professor of Chemistry, Massachusetts College of Pharmacy. 410 pages. Lea & Febiger, 1941. Price \$4.50.

Few people are more qualified than is Dr. Lynn to say: "There is a serious need for a good textbook in organic chemistry which would also give pharmaceutical and medical applications. Where it is necessary to present all of this in one course, the teacher is at present almost compelled to employ one of the numerous texts in the fundamentals and to supplement this by discussion of the official substances in lectures. No matter how efficient such a method is, the applications are generally missed by the student." The author, through his wealth of experience in teaching chemistry to pharmacy students, does not fail to appreciate the value of a sound basic training in chemistry and the difficulty on the part of the teacher as well as the student to apply this training to the study of pharmaceuticals. Lynn's "Organic Chemistry" serves as a splendid transition between the elementary organic chemistry text and the official compendia. We have long awaited this book. The inorganic aspects of the relationship between chemistry and pharmacy have been compiled before, but the organic aspects have not been. The former are far from satisfactory because in some cases excessive detail and in other cases poor arrangement of good material have done little to simplify the teaching of pharmaceutical inorganic chemistry.

The book has a goodly number of outstanding qualities, but that which is most noticeable is the arrangement of the vast amount of material. Because of the systematic arrangement, many short chapters resulted. At first sight, it would appear that there is a duplication of material, but such is not the case. By writing 44 chapters, the author was able to follow a method of presentation which provided for clarity and simplicity. It is unfortunate that he did not explain it in the introduction, because many readers will experience considerable difficulty in analyzing and understanding the arrangement. This, however, is a minor point. The scope of the text can be judged from the fact that the index is 19 pages long. The scope may be questioned by some, since it is not uncommon to find metallic salts of organic acids listed among the inorganic chemicals, but a closer analysis of Lynn's definition of organic chemistry will show that these salts are derivatives of the substitution products of hydrocarbons, and therefore they are true organic chemicals. The introduction gives a most enlightening explanation of the differences between the chemistry of the carbon compounds and that of the inorganic substances.

The pattern which Lynn followed will be recognized by some readers; it is in part that which was offered by his former teacher. This system of classification based on the underlying hydrocarbons is strikingly apparent in some chapters, and a bit obscure in others. For example, in the chapter on alcohols, arrangement is based on the number of carbon atoms and on substitution of hydroxyl for hydrogen in the methyl, methylene, and methenyl groups, giving primary, secondary and tertiary alcohols respectively. Under olefines, the author indicates by means of symbols all of the configurations possible under several formulae of saturation, and he indicates where in the list the more commonly known members are to be found. The compounds discussed in each chapter are arranged in the order of increasing carbon content, changes in configuration, and numbers and natures of substituent groups. The entire arrangement is based on the definition of organic chemistry which Lynn uses, namely, it is the chemistry of the hydrocarbons and their substitution products. While this definition is old, it will suggest to many teachers and students a new and simpler way of studying organic chemistry.

Each chapter is introduced by a brief but adequate discussion of the group of compounds to be considered. This is followed by a fine paragraph or two on nomenclature, and reports on physical properties, methods of preparation, and reactions complete the generalizations. Discussions of the specific compounds in the particular group follow, and the compounds which are included are those which are official in the Pharmacopœia, the National Formulary, and New and Non-official Remedies. In the estimation of the writer, it is here that the book serves its purpose excellently. A set of review questions closes each chapter. These questions are numerous (589 in all) and well directed. Other problems interesting for both the teacher and the student are offered in determining the configurations which are possible for a given formula of saturation and the configurations which are possible among the polyhydroxy-substitution products. Cross references throughout the text make it possible to locate easily elaborated discussions of numerous brief statements.

In spite of its broad scope, the book is surprisingly short. Brevity, however, is not obtained at the expense of clearness. In fact, the text is characterized by modest, easily understandable expression. This book is highly recommended not only because it is perhaps the first of its kind, but also because it more than fulfills the need of the student as well as the teacher of pharmaceutical chemistry.

P. J. J.

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ORGANIC CHEMISTRY, by Francis Earl Ray, University of Cincinnati. 1941. 706 pages. J. B. Lippincott Company. Price \$4.00.

Departure from convention is represented in more than one way in Ray's "Organic Chemistry." The physical appearance of the book is quite different from what we are accustomed to see. The modernistic lines suggested by the cover design are borne out in the text itself, wherein chapter headings are boldly set out and the style of the type characters is varied, for the sake of emphasis. This "easy-to-read" book is modern in other ways too. For example, photographs of atomic

models, which frequently can be used to explain structural formulae more satisfactorily, are freely scattered throughout the 682 pages. Titles introducing typical reactions of a given class of organic compounds are set out in bold-face type. The same holds true for the methods of syntheses, which are numbered I, II, III. *etc.* When a specific compound is discussed, the method of preparation is then referred to by number.

The purpose of the book is expressed in the words of the author. He says that rapid developments call for a revaluation of the material in and the methods of presenting an introductory course in organic chemistry. "The present text is an attempt to lead the student from the most elementary beginning of the subject to the point where he can read with profit much of the current literature. It endeavors, in one more or less compact volume, to eliminate (or at least narrow) the gap between textbook and present day practice." The reader is at a loss from the very beginning to determine the caliber of the book, because in one sentence the author speaks of rearranging the introductory course, and according to a subsequent statement, he wishes the book to bridge the gap between elementary theory and general practice. The book actually does neither. In many ways, it is too advanced for the beginner, and at the same time it is too greatly concerned with fundamental details for the student who has had an introductory course in organic chemistry.

When one turns his attention from theory to practice, his first barrier is the literature. The beginner knows that fats can be saponified, but he needs specific directions before he can do the work. It is agreed that the textbook cannot include laboratory methods in its already large number of pages, but it can give literature references for laboratory procedures. The chemists engaged in synthesis frequently ask themselves, "How can this compound be prepared?" It is the actual method, and not the general reaction, that is sought. How much more common must this question be for the beginner who is turning his attention from theory to practice. Few American authors have acquired the habit of giving references in their books. This practice is very common among the European authors, particularly the German. Therefore, it is the opinion of the reviewer that the book does not "eliminate (or at least narrow) the gap between textbook and present-day practice."

At the end of each chapter, chemical properties and methods of synthesis are summarized for the respective classes of compounds. In addition, there is a table of physical properties of the more common compounds of a given type. Other points considered throughout the text wherever possible include resonance, semipolar bonds, and thermochemistry. Whereas most texts discuss isomerism under hydroxy acids or under sugars, Ray's book devotes an entire chapter to this subject. Another feature of considerable value is the entire chapter on sulfur compounds. Most commendable is the fact that in each chapter at least one paragraph is devoted to the explanation of nomenclature, including the numbering of chains and cycles, and with a strong accent on modern, uniform nomenclature.

The chapters devoted to the discussion of the hydrocarbons seem to be a bit more abstract than is generally found to be true in the average organic text. For example, the alkanes discussed include members

ranging from methane (not referred to as marsh gas) through iso-octane. No mention is made of the pharmaceutically important mineral oils, vaseline, and paraffin. The only naturally occurring olefines mentioned are isoprene and carotene, both of which involve chemistry too advanced for the beginner. The same can be said about muscone, civetone, the sex hormones, and a carcinogenic substance referred to in the chapter on aldehydes and ketones, and about the inclusion of hemin and chlorophyll and the porphyrins in the chapter on heterocyclics.

Especially good is the chapter on carbohydrates. Both the open and the closed formulae for the sugars are used. This greatly facilitates the teaching and the understanding of isomeric configurations. The conventional order is somewhat upset under the discussion of the aromatic compounds, which embraces half of the book. The terms, hydroaromatic and alicyclic, are not used in the outline of the book, and the heterocyclics are covered in one short chapter. Unusual in elementary texts, yet very well placed in Ray's book, is the discussion of stability of organic compounds, based on the strains existing in the bonds between carbon atoms. It is not common to find, in a textbook for beginners, an entire chapter on quinones, including a substantial coverage of the quinhydrone. Of considerable value, however, is the chapter on dyes and indicators. It includes a two-page table which lists the identity of the various dyes, their trade names, and their properties and specific uses. Very brief and inadequate chapters on alkaloids, terpenes, and organometallic compounds complete the book.

P. J. J.

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THE 1940 YEAR BOOK OF GENERAL THERAPEUTICS edited by Oscar W. Bethea, Ph. M., M. D., F. A. C. P., Professor of Clinical Medicine, Tulane University, School of Medicine. 1941. 545 pages. 47 illustrations. The Year Book Publishers. Price \$2.50.

The issuance of the 1940 Year Book celebrates the 40th anniversary of the Year Book Series. This edition is dedicated to Dr. Bernard Fantus and the first section gives the story of the Year Book's beginning and its growth through the four decades that Dr. Fantus guided its destiny. With this edition, Dr. Oscar W. Bethea succeeds the late Dr. Fantus as editor. In the foreword of the book Dr. Bethea writes "I have been a continuous subscriber to the year book for 27 years. \* \* \* I have probably been influenced largely in my selection of material for this volume by what I have wanted to find in the Year Book when I turned to it and what I appreciated most when I found it." How well the author has carried out his plan can be appreciated by even a casual perusal of its pages. Those things of current interest, such as the latest improved test, the therapeutic value of the sulfa compounds, the antiseptics, the antibodies, the antigens, the hormones, the vitamins and their complexes, the anesthetics and techniques of administrations, the drugs of toxic importance and the present status of non-pharmaceutical therapy, are all discussed from the viewpoint of what the therapist wants to know. The book will be of equal value to the physiologist, the pharmacologist and the pharmacist.

R. A. L.



**THE CORNER DRUGGIST** by Robert B. Nixon, Jr. 1941. 291 pages. Prentice-Hall, Inc., Price \$2.50.

The book portrays the daily happenings that occur in the life of a druggist who began his apprenticeship before the turn of the century. The story would not be very different if the apprenticeship had begun in 1930 instead of 1880. Any professional man who comes as intimately in contact with the lives of human beings as the pharmacist does, will not find a very great change in human nature in the span of fifty years. Some of the writer's friends have objected to the book, thinking that it might have a sinister influence upon the modern scientific pharmacist. But I do not think so. Some very intimate scenes are mentioned; perhaps it would have been just as well to have omitted these. But Shakespeare does the same thing and we call it good literature. Thomas Mann, in his *Joseph in Egypt*, describes even more intimate relations and at great length and we hail his effort as a classic of the twentieth century. As a matter of fact, when we get down to where people live there is a question as to whether human relations have improved in the last forty or fifty centuries, except for the hope which Socrates longed for and which Christian faith brings. Chapter 9, tells the Corner Druggist's experiences in the Tenderloin. One would not have to stretch his imagination very much to see that the Corner Druggist's method of dealing kindly and helpfully with the women of the underworld would do more for these unfortunate human beings and for society in general than the methods used by the average social worker or church pulpit. There are a few outmoded beliefs and practices mentioned in the book that present an element of danger and should be omitted in future editions. One is to be found on page 230, where the statement is made that alcohol denaturized by carbolic acid is harmless because alcohol is an antidote for carbolic acid. Alcohol is not an antidote for carbolic acid. In fact, it increases the toxicity of carbolic acid. Alcohol dissolves carbolic acid more quickly than does water and for this reason physicians formerly used it to remove carbolic acid from the stomach. But when it was found that alcohol also increases the absorption of carbolic acid from the stomach into the blood stream and it is the absorbed carbolic acid that kills, the practice was discontinued as poor therapy. Another instance is found on page 285 where the cocaine habitue is advised to take a little codeine and a little whiskey to satisfy his craving for cocaine and eventually eliminate the desire for cocaine. As a matter of fact, such a patient soon finds himself a codeine habitue and an alcoholic without having lost his desire for cocaine. Such a statement could easily mislead the laymen not trained in medicine. On the whole, the author has brought out in the character of the Corner Druggist, those finer qualities of the human soul that might well be cultivated in all classes of society. The reviewer believes that if the truth is told, the more that is written about the Corner Druggist, the better both pharmacy and public health interests will be served.

R. A. L.

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**APPLIED PHARMACOLOGY** by A. J. Clark, M.C.M.D., F.R.C.P., F.R.S., Professor of Materia Medica and Pharmacology, University of

Edinburgh. 1940. 672 pages. 92 illustrations. The Blakiston Company. Price \$5.50.

In spite of the din and strife in Europe, Professor Clark has again revised his well known pharmacological text-book. First of all, he has brought it up to date by adding pertinent material pertaining to all fields of the subject, such as suprarenal cortex, anterior pituitary hormones, reactions to and toxic effects from intravenous injections, production of active immunity by toxoids, various vitamins, modern ideas concerning vitamin needs, pentothal anesthesia, drug treatment of mental disorders, tests of liver function, local actions on blood-vessels and new conceptions of brain physiology, including electroencephalography, combined into a separate chapter (here or after depressants, Kleitman's Sleep and Wakefulness should be added to the bibliography). The chapter on sulfanilamide drugs has been made a separate one (sulfathiazole not included); likewise, separate chapters now are devoted to the hemopoietic system with certain shifts of material, to the introduction, which is now split into two chapters, and to analgesics, which have been given a chapter separate from that of the central nervous system. The chapter on local anesthesia has more logically been placed after analgesics, and irritant gases have been separated from asthma. As may be inferred, the many reviews of the physiology underlying the pharmacological mechanisms of action have been retained, enabling the student readily to put himself into the proper mental state. In case of some of the hormones the author has deleted the dosages by units and retained only the more satisfactory milligram doses. In spite of the many additions, the book very creditably has been made actually a few pages shorter by "deleting material that appears to be no longer of any great importance," as by omitting purification of antitoxins and cutting off several pages on the action of radiation. Perhaps a still further contraction could profitably be made by combining all discussions of estrogens under the pharmacology of the female reproductive organs.

H. G. O. H.

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Although a review of the History of Pharmacy by Kremers-Urdang has appeared previously (Vol. 5, p. 155, 1941) in these columns, the review which follows, which appeared in *Isis*, Vol. XXXIII, pt. 2, No. 88, June, 1941, p. 307, is of particular interest, since it represents the views of a non-pharmaceutical critic, whose evaluation is based upon the book's merit as an historical work. With the thought that the comments of the reviewer may be of special interest to many who will make use of this book, either as a textbook or a reference, the review is reproduced herewith.—Ed.

EDWARD KREMERS and GEORGE URDANG: History of Pharmacy, a guide and a survey. ix+466 p. illus. Philadelphia, J. B. Lippincott, 1940, (\$4.50).

If Baltimore, Maryland, claims the title of the center of medico-historical studies in America, then Madison, Wisconsin, more specifically, the University of Wisconsin, many properly claim the title of the center

and focal point of studies in the history of pharmacy. For from this latter place has just come a monumental work on the history of this subject. Long in gestation, the product of the gifted teacher and historian Dr. Edward Kremers and his diligent colleague, Dr. George Urdang, this work is a fruitful result of the synthetic labors of an American and European scholar.

Although the profession of pharmacy is at least as old as medicine, its history has not had as many devotees as the latter. Certainly in America the number of histories of pharmacy is so small that the fingers of one hand are sufficient to count them. It is, therefore, particularly gratifying to have now an admirable model which future historians may expand but few will improve. Described on the title page as "a guide and a survey" the book excellently fulfils its purpose.

The history of pharmacy like the history of medicine has followed a tortuous path. The recognition of this fact by the authors is responsible for the structure of their book. It is divided into four sections as follows. Part one is entitled *Early Backgrounds in the Old World*. This section covers only thirty-one pages but despite its condensation provides a good summary of the early history of pharmacy from Antiquity through Middle Ages. In part two is discussed the rise of professional pharmacy in Europe. Here are chapters on medical theories and *materia medica* and the developments in Italy, France, Germany and England. Eighty-seven pages have been allotted to this section. We come now to the main body of the book (199 p.) for which the preceding parts have prepared us: *Pharmacy in the United States*. This is the longest and most adequate section of the book. The history of pharmacy in America is treated not merely chronologically but topically. Beginning with a study of what the authors term "the period of unorganized development," outlining the history of the apothecary from the earliest colonial settlements through the Revolution and the period of pioneer expansion, the authors lead us to a discussion of what they term "the period of organized development." Here they treat (and their treatment is, so far as I know, unique) the history of the growth of associations, the rise of legislative regulation, the development of education, the establishment of a literature, and they conclude with a study of the economic structure. Finally, part four treats of discoveries, inventions and other contributions to society by pharmacists. The book concludes with a bibliography of twenty-nine pages, a chronology, a glossary and an index. Thirty illustrations illuminate the text.

Thus one more work has been added to the growing shelf of indispensable reference works for the historian of science.

Library of Congress, Washington, D. C.

Morris C. Leikind.

## The Affiliation of Rush Medical College with the University of Illinois\*

"An agreement has been entered into for Rush Medical College and Clinic, Chicago, to turn over their facilities to the Presbyterian Hospital, and in turn to become affiliated with the University of Illinois. The Presbyterian Hospital is close to the Chicago campus of the University of Illinois in the West Side Medical Center.

The affiliation adds members of the faculty, the training and research facilities of one of the city's largest and best-equipped general hospitals and a leading dispensary to the Colleges of Medicine, Dentistry and Pharmacy of the university and the research and educational hospitals and institutes. The latter were transferred, by agreement between the Department of Public Welfare and the university, on July 1. With the taking over of the state research groups and the affiliation with the Presbyterian Hospital and Rush Medical College there is created a leading medical center.

"The name of the college will be perpetuated, as members of its staff who have formed the faculty of the College of Medicine of the University of Illinois will be designated "Rush professors." Members of the Presbyterian Hospital staff will be appointed to the clinical staff of the College of Medicine of the university. Future appointments to the hospital staff will be made from nominations made by the university.

"The classes given at Rush Medical College will continue for another two years until students already enrolled complete their work. No new students will be enrolled this fall; newcomers will be eligible to apply for admission to the University of Illinois College of Medicine. The property of the college, hospital and dispensary will remain in the names and under the control of each of those organizations for the carrying out of trusts and other agreements."

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"Under the agreement, the University of Illinois will "formulate a comprehensive coordinated program of undergraduate and graduate medical education and research which shall be designed to use jointly the facilities of the Presbyterian Hospital, the Colleges of Medicine, Dentistry and Pharmacy, and the research and educational hospitals and the institutes of the university." Also, the university will "suggest a program of affiliation for the School of Nursing of the hospital."

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\*The affiliation of Rush Medical College with the University of Illinois, making available the facilities of the Presbyterian Hospital to the Colleges of Medicine, Dentistry and Pharmacy marks an important step in the progress of the College of Pharmacy of the University of Illinois. This announcement is most timely when considered with reference to the recently announced new curriculum which provides for the election of specialized study during the junior and senior years in a number of fields, including hospital pharmacy. See "Pharmaceutical Education on the March," p. 373.—Ed.

The University of Illinois group is the second largest in the west side medical center. It is exceeded only by Cook County Hospital, which includes eleven buildings forming the largest general hospital in the world."—*Science*, 94, 35 (1941).

## Book and Journal Exchange

The Connecticut College of Pharmacy would like to secure the following journals: *Journal of the American Pharmaceutical Association*—Vol. 1, 1912, Nos. 3 through 9 and No. 12; Vol. 2, 1913, No. 6; Vol. 3, 1914, Nos. 7, 8, 9, and 11; Vol. 7, 1918, Nos. 1 and 8; Vol. 8, 1919, No. 4; Vol. 10, 1921, Nos. 2 through 6, 8, and 12; Vol. 11, 1922, No. 5; Vol. 12, 1923, No. 5; Vol. 18, 1929, No. 11; and Vol. 19, 1930, Nos. 3 and 4. *American Journal of Pharmacy*, Vols. 1 through 36; Vols. 57 through 98; Vol. 99, Nos. 1, 2, 4, 5, 8, 9, 10, and 11; Vol. 100, No. 6; and Vol. 101, Nos. 2 and 3. The College has a number of duplicate volumes which it is willing to exchange for any of the items listed above. For information on these, inquiries should be made of Dean Henry S. Johnson, Connecticut College of Pharmacy, New Haven, Connecticut.

The New Jersey College of Pharmacy, Rutgers University, The State University of New Jersey, requires the following journals to complete their files. *American Journal of Pharmacy*: Vols. 60-62 (incl.), 1888-90; Vols. 64-72 (incl.), 1892-1900. *Druggists Circular*: Vols. 11 and 12, 14-18 (incl.), 47, 48, and 50. *Quarterly Journal of Pharmacy and pharmacology*: Vol. 8, 1935, No. 1. *American Druggist*: Vols. 1-23 (incl.); Vols. 75-76, 1927, Apr., May, June, Oct., and Dec.; Vols. 77-78, 1928, Febr., April, July, and Sept. *Chemist and Druggist*: Vols. 1-58 (incl.), 104-105, 1926. *Journal of the American Chemical Society*: Vols. 1-16 (incl.). *Physiological Reviews*: Vols. 3 and 4. *Philadelphia Journal of the Medical and Physical Sciences*: Vols. 8 and 9, 1823-25; any volumes after 13, 1826. *Proceedings of the American Pharmaceutical Association*: Vols. 2-5 (incl.). *Western Druggist*: Vols. 1-9 (incl.); 14-18 (incl.); and 30 to date.

The following duplicate journals are offered in exchange for any of the items listed above. Since some of these may have been exchanged since this list was submitted for publication, it is suggested that those interested make inquiry concerning these of Dean Ernest Little. *Proceedings of the American Pharmaceutical Association*: Unbound, 1858; bound, 1860; 1862-70; 1871 (2 copies); 1872-75; 1876-79 (2 copies of each); 1880-81 (3 copies); 1882-86 (2 copies); 1887-92; 1893-94 (2 copies); 1895; 1896-1901 (2 copies); 1902-05 (3 copies of each); 1906; 1907-08 (2 copies); 1909; 1910-11 (2 copies). *Yearbook of the American Pharmaceutical Association*: Bound, 1912 (2 copies); 1913-16 (3 copies); 1917 (5 copies); 1918 (4 copies); 1919 (3 copies); 1920 (4 copies); 1921 (2 copies); 1922 (4 copies); 1923 (2 copies); 1924; 1925 (3 copies); 1926 (2 copies); 1927-28 (2 copies); 1929 (2 copies); 1930; 1903-25, *Collective Index*. *Journal of the American Pharmaceutical Association*: Bound, 1913; 1915-17; 1929; unbound, 1926; 1927; 1928-30 (2 copies); 1931; 1932 (3 copies); 1933 (2 copies); 1934 (3 copies). *Biological Abstracts*: Unbound, 1928-31 (no indices). *American Journal of Pharmacy*:

1903-09; 1913; 1921-23; 1932; 1933; 1934 (2 copies). *Bulletin of Pharmacy*: 1922 (2 copies); 1923. *Druggists Circular*: Unbound, 1907; 1912; 1914; 1915; 1923; 1924; 1933; *Indices*, 1908; 1910; 1912; 1913; 1920-32. *American Druggist*: Bound, 1896; 1898-1902; 1904-07; 1909-19; unbound, 1905-07; 1912; 1922-24; 1926. *Industrial and Engineering Chemistry*: Regular edition, bound, 1915; 1917-26; unbound, 1916; 1919; 1921 (2 copies); 1922-23; 1929-30; 1932 (2 copies); 1933-35; Analytical edition, unbound, 1932-35. *Proceedings of the New Jersey Pharmaceutical Association*: Bound, 1900; 1901 (3 copies); 1902 (2 copies); 1903-07 (3 copies); 1908-09 (4 copies); 1910 (5 copies); 1911 (3 copies); unbound, 1890; 1891-92 (2 copies); 1893; 1895; 1912 (4 copies); 1913-15 (2 copies); 1916-20; 1921 (2 copies); 1922 (3 copies); 1923 (2 copies); 1924; 1925; 1929. *American Association of Colleges of Pharmacy*: Bound, 1924 (2 copies); 1925; unbound, 1926; 1934 (5 copies). *Journal of Bacteriology*; 1929-31. *Journal of the American Chemical Society*: Bound, 1904; unbound, 1917; 1919 (2 copies); 1921 (2 copies); 1922 (3 copies); 1923-25; 1926 (2 copies); 1927; 1931-33; 1934 (4 copies); 1935; *Odd Nos.*, 1895, Nov.; 1898, July. *Chemical Abstracts*: 1916 (2 copies); 1918 (2 copies); 1919-20 (4 copies); 1921 (3 copies); 1922-23 (4 copies); 1924 (3 copies); 1925 (2 copies); 1926 (3 copies); 1927 (3 copies); 1928 (2 copies); 1929 (3 copies); 1930-31 (4 copies); 1932; 1933 (2 copies); 1934 (4 copies); 1935.

The following journals are missing from the files of the library of the College of Pharmacy of Ferris Institute, Big Rapids, Michigan. Those having duplicates of the journals required, are requested to communicate directly with the Dean. *American Journal of Pharmacy*: Vols. 1917-22, 1928, 1931, and 1933; Missing Nos. as follows: 1914, March; 1916, Oct.; 1923, Jan., Febr., and Aug.; 1925, June, July, Aug., and Sept.; 1926; Jan., March, June, Aug., Sept., Nov., and Dec.; 1929, Sept., Dec.; 1930, Jan., May, June, Sept., and Dec.; 1932, March, Apr., May, Aug., Sept., Oct., and Dec.; 1934, Jan., March, Apr.; 1935, Jan.; 1937, Jan., Sept., Oct., and Nov. *American Professional Pharmacist*: All Vols. prior to 1933 and missing Nos. as follows: 1935, Jan., Febr., March; 1937, March, Apr., June, July, Nov., Dec.; 1938, Jan., Febr.; 1939, Sept. *The Analyst*: All Nos. prior to 1938. *Chemical Abstracts*: All Vols. prior to 1919; 1923; 1925; 1929; 1933; 1934; Missing Nos. as follows; 1932, March 10 through Dec. 20; 1935, Dec. 10 and 20; 1936, March 20, Dec. 10 and 20; 1937, Oct. 10, Dec. 10 and 20. *Archives of Physical Therapy*: All Vols. prior to 1938. *Journal of Chemical Education*: All Vols. prior to 1932; 1935; Missing Nos. as follows: 1932, Nov., Dec.; 1933, Jan., Febr., Apr., Aug., Sept.; 1934, Febr., March. *Journal of the American Chemical Society*: All Vols. prior to 1919; 1920-21; 1924-25; 1927-31; 1933; 1935; Missing Nos. as follows: 1932, Jan.; 1936, Nov. *Journal of the American Medical Association*: All Vols. prior to 1893; 1910-33; Missing Nos. as follows: 1907, July through Dec.; 1934, Jan. through Nov., Dec. 7; 1935, Jan. 5 and 19, all issues in May, Oct. 19, all issues in Dec. *Journal of the American Pharmaceutical Association*: All Vols. prior to 1919; 1922-24; Missing Nos. as follows: 1919, Jan., Febr., March, Apr., June, July, Nov., Dec.; 1920, Aug., Oct.; 1921, Nov., Dec.; 1926, Nov.; 1929, Nov.; 1930, March; 1935, Oct.

Those wishing books or journals or having them for exchange—address the Editor.



## INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

### NEW YORK

University at Buffalo, School of Pharmacy, Buffalo; A. B. Leman, Dean (1929).

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### PENNSYLVANIA

Duquesne University, School of Pharmacy, Pittsburgh; Hugh G. Madison, Dean (1927).

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University of South Carolina, School of Pharmacy, Columbia; Emory T. Medley, Dean (1923).

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University of Tennessee, School of Pharmacy, Memphis; Robert A. Crowe, Dean (1924).

### TEXAS

University of Texas, College of Pharmacy, Austin; William F. Gidley, Dean (1926).

### VIRGINIA

Medical College of Virginia, School of Pharmacy, Richmond; Worthy F. Hunt, Dean (1926).

### WASHINGTON

University of Washington, College of Pharmacy, Seattle; Forest J. Goodrich, Dean (1926).

State College of Washington, School of Pharmacy, Pullman; F. H. Dietrich, Dean (1912).

### WEST VIRGINIA

West Virginia University, College of Pharmacy, Morgantown; J. Lester Harman, Director (1926).

### WISCONSIN

University of Wisconsin, School of Pharmacy, Madison; Arthur H. Uhl, Dean (1926).

